

Research Article

<http://zoobank.org/urn:lsid:zoobank.org:pub:0CF4E7A6-03CA-4CB2-AE03-DADBA388B2E9>

Crinipus leucozonipus Hampson, 1896 – a new genus and species for the palaearctic fauna (*Lepidoptera, Sesiidae*)

Oleg G. Gorbunov¹

Abstract: *Crinipus leucozonipus* Hampson, 1896 – a new genus and species for the palaearctic fauna (*Lepidoptera, Sesiidae*). *Cesa News* 101: 1-6, 5 figs.

Crinipus leucozonipus Hampson, 1896 (*Lepidoptera, Sesiidae*) is recorded for the Palaearctic fauna for the first time. The illustrations of imago and male genitalia are given.

Key words: *Lepidoptera, Sesiidae, Crinipus leucozonipus*, Israel, Palaearctic Region, new record.

Introduction

The clearwing moth fauna of Israel is still poorly known. At present, we have at hand only a few papers dealing with these extremely interesting moths of the region. First of all, we have to mention a work dealing with Sesiidae collected by Freina and Lingenhöle during their collecting trip to Israel in 1999 (de Freina, Lingenhöle, 2000) They caught and published data about 12 species, one of them, *Synanthedon stomoxiformis levantina* de Freina & Lingenhöle was described as a new subspecies. Besides that, they have suggested findings at least 11 species more in future. One of them, *Synanthedon vespiformis* (Linnaeus, 1761), was collected at Kefar Tabor in 2010

¹ A.N. Severtsov Institute of ecology and evolution Russian academy of sciences, Leninsky prospect 33, Moscow, 119071 Russia.
E-mail: gorbunov.oleg@mail.ru

(Levi-Zada et al., 2011). However, Freina and Lingenhöle did not expect to find such a unique Sesiidae in Israel as *Crinipus leucozonipus* Hampson, 1896.

Only four specimens of a single species of the clearwing moth family *Sesiidae* (*Lepidoptera*) were collected by Colonel J.W. Yerbury and Captain C.G. Nurse during their voyage to Aden in 1894-1895. These specimens were described as new species and genus, *Crinipus leucozonipus*, by Sir G.F. Hampson in 1896 (Hampson, 1896). It has hitherto been known from Aden, Yemen and Riyadh, Saudi-Arabia only (Bartsch, 2010). We record this species for Israel and for Palaearctic for the first time.

As for the position of *Crinipus* in the modern system of the family, it is unclear and requires thorough revision of the clearwings of the whole Afro-tropical region, to which this genus belongs to by its origin.

The material studied or mentioned herein is kept in the following collections abbreviated as follows: BMNH — The Natural History Museum, London, England; MNHP — Museum National d'Histoire Naturelle, Paris, France; COGM — Collection Oleg G. Gorbunov, Moscow, Russia; CJMM — Collection Josef Mooser, Munich, Germany.

***Crinipus leucozonipus* Hampson, 1896 (Figs. 1-4, 5A-D)**

“*Crinipus leucozonipus*, n. sp.” — Hampson, 1896: 277, pl. 10, fig. 21. Type locality: “Aden, (Yerbury, Nurse)” [= Yemen, Aden]. Syntypes: 3 males (BMNH), 1 female (MNHP) (Bartsch, 2010).

Hampson, 1919: 54; Dalla Torre, Strand, 1925: 5; Gaede 1929: 518; Heppner, Duckworth, 1981: 41; Führinger, Kallies, 2004: 43; Bartsch, 2010: 38.

This interesting species of the clearwing moths, which is the type species of the genus *Crinipus*, has been known only from seven specimens. The type series contains four syntypes. Three males are deposited in BMNH and one female in MNHP (Bartsch, 2010). According to the labels all syntypes were taken in March and April (Bartsch, 2010). In his revision of the genus *Crinipus* Hampson, 1896 D. Bartsch mentioned additional 2 males and 1 female (Bartsch, 2010), which were collected in Riyadh in March.

In the mid of March 1988 in the vicinity of Eilat of Southern Israel G. Müller and J. Mooser caught two males of a clearwing moth. After careful study it turned out that they belong to *Crinipus leucozanipus* Hampson, 1896. This finding was very surprising, since until now this species was known in the Arabian Peninsula only. Despite the fact that this clearwing moth has been known from Riyadh, it is never included in the Palearctic fauna (Špatenka et al., 1999). Thus, this finding is not only a first for Israel, but for the entire Palearctic Region.

A rather complete redescription of the morphology including the pictures of male genitalia has been published by Bartsch, 2010. The illustrations of the collected moths and the male genitalia are presented herein.

Unfortunately, we know nothing about a host plant of the species. It is clear that it is on the wing in March and April.

Material. 1 male (Figures 1, 2), Israel, 10 km North of Eilat, mid March 1988, G. Müller & J. Mooser leg. (Picture §§ Sesiidae 0629-0630-2014/Photo by O. Gorbunov) (CJMM); 1 male (Figures 3, 4, 5A-D), same locality and date, G. Müller & J. Mooser leg. (Picture §§ Sesiidae 0631-0632-2014/Photo by O. Gorbunov) (Genital preparation # OG-08-2014) (COGM).

Acknowledgements

I am grateful to Dr. Günter Müller (Haifa, Israel) and Dr. Vasily D. Kravchenko (Tel-Aviv, Israel) for the loan of material and for fruitful discussions about the butterflies and the nature of the Middle East.

References

Bartsch, D. 2010. Taxonomic revision of the clearwing moth genus *Crinipus* Hampson, 1896 (Lepidoptera: Sesiidae). *Zootaxa* 2618: 36–46.

Dalla Torre, K.W. & E. Strand 1925. Aegeriidae. Lepidopterorum Catalogus, Vol. 31, W. Junk, Berlin, 202 pp.

Freina, de, J.J. & A. Lingenhöle 2000. Beitrag zur Sesiidae-Fauna Israels und Palästinas (Insecta, Lepidoptera, Sesiidae). *Mitteilungen der Münchener Entomologischen Gesellschaft* 90: 75–84.

Gaede, M. 1929. 22. Familie: Aegeriidae (Sesiidae). In Seitz, A. (ed.), Die Großschmetterlinge der Erde Vol.14. Die afrikanischen Spinner und Schwarmer. A. Kernen Verlag, Stuttgart, Germany, Ss. 515–538, Taf. 77.

Hampson, G.F. 1896. Sesiidae. In Walsingham, T. & Hampson, G.F. On Moths collected at Aden and in Somaliland. *Proceedings of the Zoological Society of London* 17(1): 277, pl. 10.

Hampson, G.F. 1919. A classification of the Aegeriidae [sic!] of the Oriental and Ethiopian Regions. *Novitates Zoologicae* 26 (1), 46–119.

Heppner, J.B. & W.D. Duckworth 1981. Classification of the Superfamily Sesioidea (Lepidoptera, Ditrysia). *Smithsonian Contributions to Zoology* 314, 1–144.

Levi-Zada, A., Ben-Yehuda, Sh., Dunkelblum, E., Gindin, G., Fefer, D., Protasov, A., Kuznetsowa, T., Manulis-Sasson, Sh. & Z. Mendel, 2011. Identification and field bioassays of the pheromone of the yellow-legged clearwing *Synanthedon vespiformis* (Lepidoptera: Sesiidae). *Chemoecology* 21: 227–233.

Puhringer, F. & A. Kallies 2004. Provisional checklist of the Sesiidae of the world (Lepidoptera: Ditrysia). *Mitteilungen der Entomologischen Arbeitsgemeinschaft Salzkammergut* 4, 1–85.

Špatenka, K., Gorbunov, O., Laštůvka, Z., Toševski, I. & Y. Arita 1999. Sesiidae – Clearwing Moths. In: Naumann, C.M. [Ed.]. *Handbook of Palaearctic Macrolepidoptera*, Vol. 1. Gem Publ. Co., Oxfordshire, UK. xvi, 569 pp.



Figure 1 - *Crinipus leucozonipus* Hampson, 1896, male, Israel, 10 km North of Eilat, mid March 1988, G. Müller & J. Mooser leg. (Picture ## Sesiidae 0629-0630-2014/Photo by O. Gorbunov) (CJMM). Alar expanse 17.2 mm.



Figure 2 - ditto, underside.



Figure 3 - *Crinipus leucozonipus* Hampson, 1896, male, Israel, 10 km North of Eilat, mid March 1988, G. Müller & J. Mooser leg. (Picture ## Sesiidae 0631-0632-2014/Photo by O. Gorbunov) (Genital preparation # OG-08-2014) (COGM). Alar expanse 17.4 mm.



Figure 4 - ditto, underside.

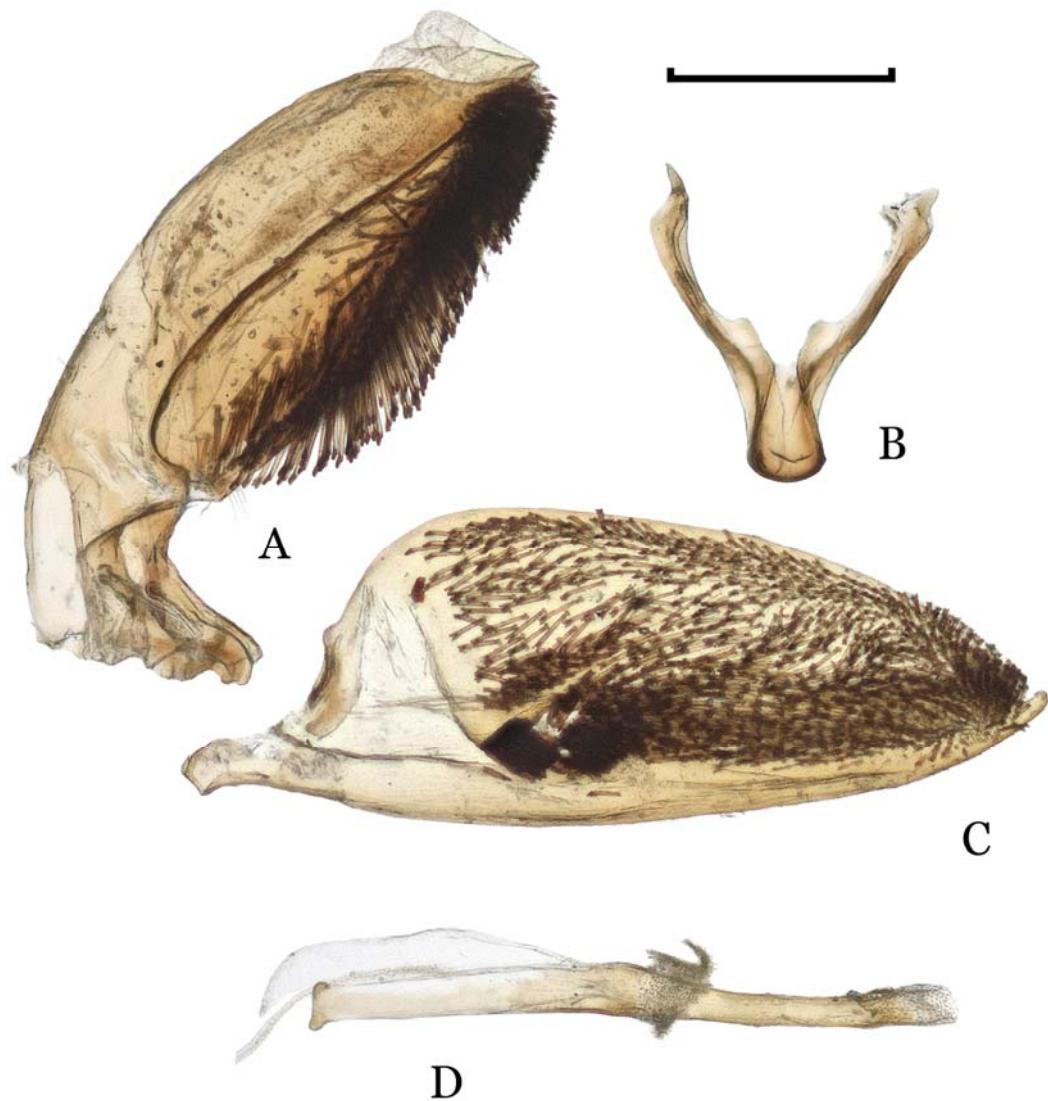


Figure 5 - *Crinipus leucozonipus* Hampson, 1896, male: genitalia (Genital preparation # OG-08-2014): (A) tegument-uncus complex; (B) valva; (C) saccus; (D) aedeagus. Scale bar: 0.5 mm.

Research Article

<http://zoobank.org/urn:lsid:zoobank.org:pub:1A83780D-37A9-4BEF-9E50-4D8C9D6A26EA>

An annotated list of the *Sarcophaginae* (*Sarcophagidae*) recorded in Ukraine (*Diptera*)

Yury Verves ² Luydmila Khrokalo ³

Abstract: An annotated list of the *Sarcophaginae* (*Sarcophagidae*) recorded in Ukraine (*Diptera*). *Cesa News* 101: 7-81.

An annotated list of 99 sarcophagine species from 25 genera is presented: *Agriella gavrylenkoi*, *Blaesoxipha cochlearis*, *B. confusa*, *B. grylloctona*, *B. litoralis*, *B. plumicornis*, *B. redempta*, *B. rufipes*, *B. unguulata*, *B. unicolor*, *Servaisia erythrura*, *S. rossica*, *Tephromyia grisea*, *Helicophagella agnata*, *H. crassimargo*, *H. noverca*, *H. novercoides*, *H. pseudognata*, *H. rosellei*, *H. dreyfusi*, *H. macrura*, *H. melanura*, *Discachaeta arcipes*, *D. cucullans*, *D. pumila*, *Heteronychia mutila*, *H. siciliensis*, *H. belanovskyi*, *H. bulgarica*, *H. chaetoneura*, *H. consanguinea*, *H. depressifrons*, *H. dissimilis*, *H. haemorrhoa*, *H. haemorrhoides*, *H. lacrymans*, *H. mazurmovitshi*, *H. pauciseta*, *H. proxima*, *H. rohdendorfi*, *H. rohdendorfiana*, *H. schineri*, *H. slovaca*, *H. vagans*, *H. vicina*, *H. boettcheri*, *H. filia*, *H. filiola*, *Karovia hirticrus*, *Asceloctella granulata*, *Bellieriomima subulata*, *Krameromyia anaces*, *Myorhina nemoralis*, *M. lunigera*, *M. nigriventris*, *M. pandifera*, *M. socrus*, *M. soror*, *M. villeneuvei*, *M. nemoralis*, *Pandelleana protuberans*, *Sarina olsoufjevi*, *S. sexpunctata*, *Thyrsocnema incisilobata*, *T. kentejana*, *Bercaea africa*, *Liopygia argyrostoma*, *L. crassipalpis*, *L. uliginosa*, *Liosarcophaga dux*, *L. emdeni*, *L. jacobsoni*, *L. parkeri*, *L. portschinskyi*, *L. tuberosa*, *L. similis*, *Parasarcophaga albiceps*, *Robineauella pseudoscoparia*, *R. caerulescens*, *Sarcophaga bachmayeri*, *S. baraschi*, *S. bergi*, *S. carnaria*, *S. jupalnica*, *S. hennigi*, *S. lehmanni*, *S. moldavica*, *S. mouchajosefi*, *S. schusteri*, *S. serbica*, *S. subvicina*, *S. ukrainica*, *S. variegata*, *S. zumptiana*, *Kramerea schuetzei*, *Rosellea aratrix*, *Ravinia pernix*, *Sarcotachinella sinuata*. Four species are firstly recorded for Ukrainian fauna: *Heteronychia chaetoneura*, *Sarcophaga baraschi*, *S. jupalnica* and *S. mouchajosefi*; last species and *S. wiesenthali* firstly reported for Slovakia too. *Blaesoxipha bakweria* Lehrer & Omgbia, 2013, syn. nov., firstly synonymised with *Blaesoxipha rufipes* (Macquart, 1839). The quantity of all known species of sarcophagids from Ukraine (179) includes not less than 90% of real species composition.

Key words: *Sarcophaginae*, *Sarcophagidae*, *Diptera*, Ukraine, list, fauna.

Sarcophagid flies are grey, rarely sandy or yellow-grey to almost black; robust or slender flies varying in size (2.0-22.0 mm). 405 genera and 2834 species are distributed in all continents, with an exception of the Arctic and Antarctic. *Sarcophagidae* devided into 5 subfamilies: *Macronychiinae* (1 genus and 21 species), *Miltogrammatinae* (56 genera and 655 species), *Eumacronychiinae* (7 genera and 44 species), *Paramacronychiinae* (19 genera and 80 species), *Sarcophaginae* (320 genera and 2034 species). The genera and subgenera of *Sarcophaginae* and order of their sequence in list are presented according to taxonomic reviews (Giroux & Wheeler, 2010; Povolný & Verves, 1997; Richet et al., 2013; Rohdendorf, 1965, 1970; Verves, 1985, 1986, 1989, 1993; Verves & Khrokalo, 2006; Xue & Verves, 2009; Xue et al., 2011). 178 species have been found in Ukraine including results of present article (table 1). The general distributional data are given after Draber-Moňko (2007), Kara & Pape (2002), Kejval (2011), Khrokalo & Verves (2009), Koçak (2014), Koçak & Kemal (2012), Pape (1996), Pape et al. (2002), Pape & Merz (1998), Pekbey & Hayat (2010, 2013a, b), Peris et al., (1994, 2001), Povolný & Verves (1990), Prado e Castro et al.

² Institute for Evolutionary Ecology, National Academy of Sciences of Ukraine, Kyiv, Ukraine, Academician Lebedev Str. 37, Kyiv, Ukraine, 03143; e-mail: fly@voliacable.com

³ National Technical University of Ukraine "Kyiv Polytechnic Institute", Peremohy Awe. 37, Kyiv, Ukraine, 03056.

(2010), Raffone (2009), Richet (1991), Richet et al. (2011), Rudzinski (1999), Verves (1978a, b, 1986, 1990, 1998, 2000, 2001, 2003, 2004, 2010, 2013), Verves & Khrokalo (2006, 2009), Verves & Szpila (2011), Verves et al. (1984, 2005), Whitmore (2011), Whitmore et al. (2008).

Material and Methods

The first regional records are asterisked (*). The data on Ukrainian Regions (“Oblasts”) are given in alphabetical order. Krym Autonomy is designated as “Crimea”. The data on territories of native Kyiv City and Kyiv Region are separated. The points of more detailed investigations are such (given in alphabetical order):

Cherkasy region: Kaniv District: Kaniv State Nature Reserve, annual;

Chernigiv Region: Ichnya District: “Trostyanetz” dendrological park, meadows, bushes and wood, 4-13.08.1999; Borzna District, environs of Yaduty village, meadows, bushes, pine forests, sandy areas, 7-12.07. and 16-25.08.2000;

Crimea: Bakhchysarai District: environs of Beregove village, dry meadows and loamy sea shore, 31.07-11.08.2004;

Crimea: Lenino District: Qazan Tip State Reserve: stones and dry steppe areas, 17-29.07.2007;

Dnipropetrvsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetrvsk University, meadows and bushes, 4-15.06.2000.

Kherson Region: Chornomorsky [= Black Sea] Biosphere Reserve, sandy areas, 18-29.07.2006;

Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, sandy and dry steppe areas, 7-26.07.1998;

Kyiv City and its environs, stations;

Poltava Region: Pyryatyn and Grebinky Districts: several localities; sandy areas, bogs, meadows, bushes, forest borders etc. 8-18.07.2009; 13-18.07.2010; Sumy Region: Romny City, sandy areas, meadows and bushes at banks of Romenka river, 21-27.08.2009;

Vinnytsia Region: Chechelnyk District: meadows, bushes, forest borders, 26.-27.05, 6.-29.07.2013;

Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, mesophilic meadows and forest borders, 16-23.08.2014.

Zaporizhzhya Region: Pryazovske District: Stepanivka village, sandy areas, 10-26.08.1997. Abbreviations of states' names present according to MFI country codex.

The determinations of specimens have been carried out with using of a stereomicroscope Leica M205C (Leica Microsystems, Wetzlar, DE).

List of species

Tribe *Protodexiini* Subtribe *Protodexiina*

1. *Agriella gavrylenkoi* Verves & Szpila, 2011

Distribution: Palaearctic: Europe: UA: Kherson Region.⁴

2. *Blaesoxipha cochlearis* (Pandellé, 1896)

Distribution: Palaearctic: Europe: BG, CH, CZ, DE, ES, FR, GE, HR, HU, IT, MK, PL, RO, RS, RU (Rostov and Voronezh Regions), SI, SK, UA; North Africa: DZ; Asia: AM, AZ, CN (Gansu, Liaoning, Xinjiang), JP (Honshu), KG, KP, KR, KZ (East Region), MN, RU (Altai, Amur, Astrakhan,

⁴ Only one specimen, holotype (♂) is known.

Buryatia, Chita, Dagestan, Irkutsk, Novosibirsk and Primorye Regions), TJ, TR. UA: Cherkasy, Dnipropetivsk, Kherson and Poltava Regions.

Larvae are internal parasites of nymphs and adults of different orthopteran hosts⁵: Acrididae: *Eirenephillus longipennis* (Artamonov, 1985, 1988); Tettigonidae: *Barbitistes fisheri* (Léonide & Léonide, 1972), *Decticus albifrons* (Delassus, 1925; Léonide & Léonide, 1972), *Ephippiger ephippiger* (Léonide & Léonide, 1972), *Gampsocleis schelkovnikovae* (Olsoufjev, 1929), *Pholidoptera chabrieri* (Léonide & Léonide, 1972), *P. femorata*, *Platycleis denticulata* (Pape, 1994), *Tettigonia viridissima*, and Gryllidae: *Gryllus* sp. (Léonide & Léonide, 1972). Larvae are developed usually during 4-5 days, sometimes to 7 days in host body, puparium in soil – during 9-11 days. Females larvaeposit not more than 60 larvae; the time of copulation is 18-50 min (Léonide & Léonide, 1972, 1986).

Material examined: Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, meadow, at flowers of *Heracleum* sp., 5.-6.08.2000, 2 ♂; Fedorivka village, meadows along Samara River, 1.08.2000, 3 ♂. Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, old mulberry plantation, on drop, 16.-24.07.1998, 20 ♂ (Yu. Verves).

3. *Blaesoxipha confusa* Villeneuve, 1912

Distribution: Palaearctic: Europe: HU, RU (Rostov and Orenburg Regions), UA; Asia: KZ (Astana Region), RU (Chelyabinsk and Sverdlovsk Regions), UA: Cherkasy Region.

Flies prefer dry meadows, steppe and semidesert habitats (original data).

4. *Blaesoxipha grylloctona* Löw, 1861

Distribution: Palaearctic: Europe: AT, BG, CH, DE, DK, ES, FI, FR (mainland), IT (mainland), LI, PL, RS, RU (Leningrad Region), UA; North Africa: EG, PT (Azores); Asia: AF, AZ, CN (Liaoning), IL, IR, JP (Honshu); KR, KZ (Kokchetau Region), MN, RU (Buryatia, Khabarovsk and Primorye Regions), SA, TJ, TR. UA: Cherkasy, Dnipropetivsk*, Kyiv and Zhytomyr Regions.

Larvae are internal parasites of nymphs and adults of locusts *Aeropedellus variegatus*, *Ailopus strepens* (Pape, 1994), *Chorthippus biguttulus*, *C. brunneus* (Léonide & Léonide, 1982), *C. longicornis* (Pape, 1994), *C. mollis*, *C. parallelus* (Léonide & Léonide, 1982), *Locusta migratoria* (Olsoufjev, 1930), *Omocestus ventralis* (Léonide & Léonide, 1982), *Pezotettix albina* (Löw, 1961), *Podisma alpina* (Pape, 1994), *P. pedestris* (Löw, 1961), *Schistocerca gregaria*, *Stenobothrus lineatus* (Pape, 1994). Flies were collected at altitudes not more than about 2500 m o. s. l. (Pekbey & Hayat, 2013a). Adult flies feed on flowers and aphids' excreta and prefers mesophilic steppe, meadows and bushes (Verves & Khrokalo, 2006).

Material examined: Dnipropetivsk Region: Novomoskovsk District: Bogatyrsk biological station of Melitopol State Pedagogical University, feather grass steppe, 6.08.2000, 2 ♂ (Yu. Verves).

5. *Blaesoxipha litoralis* (Villeneuve, 1911)

Distribution: Palaearctic: Europe: BG, CH, ES, FR (south part and Corsica), HU, IT (mainland, Sardinia and Sicily), RO, RS, RU (Orenburg Region), UA; North Africa: DZ, MA; Asia: AM, AZ, GE, IR, KR, KZ, RU (Altai, Chita and Dagestan Regions), SY, TJ, TM, TR, UZ. UA: Crimea, Kherson, Mykolaiv, Odesa*, Poltava and Zaporizhia Regions.

Larvae are internal parasites of nymph and imago of Acrididae: *Calliptamus italicus* (Charykuliev, 1965), *Dociostaurus maroccanus* (Léonide, 1983), *Locusta migratoria* (Rohdendorf, 1928) in natural habitats and *Pezotettix giornai* under laboratory conditions (Léonide & Léonide, 1986). Females infest the hosts throughout its genitoanal opening (Léonide & Léonide, 1977). Adult flies prefer dry meadows, steppe, bushes and ground roads and feed on flowering plants (Verves & Khrokalo, 2006); were found in mountains at altitudes up to 2300 m a. s. l. (Pekbey & Hayat, 2013a).

⁵ The bionomics data about sarcophagids flies as orthopteran parasites were generalized by Greathead (1963, 1992), Léonide & Léonide (1986), Pape (1994), Rees (1973) and Verves (1985, 1993)

Material examined: Crimea: Bakhchisaray District: Bakhchysaray City: stoned hill, 400 m a. s. l., 12.08.1996, 2 ♂; Beregove village, sandy area and loam sea shore, 11-23.08.1996, 4 ♂; 24.08.2001, 1 ♂; Lenino District: Qazan Tip State Reserve, 23-29.07.2007, 14 ♂. Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, sandy and dry steppe areas, 7, 8, 14.-16. and 22.07.1998, 69 ♂; old mulberry plantation, on drop, 19-20. and 23-24.07.1998, 31 ♂; Mykolaiv Region: Ochakiv District: Parutino village, debris of antic Olvia City, 16.07.2006, 1 ♂ (Yu. Verves). Odesa Region: Ismail District: Kyslytzya village, 15 km SE, 2.08.2009, 1 ♀; 5 km SE, 7-9.08.2009, 4 ♂ (V. Gorobchysyn, Yu. Protzenko). Zaporizhzhya Region: Berdyansk City: sandy spit at Azov Sea, 14-17.08.1994, 1 ♀; Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 8 ♂, 1 ♀; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 26.08.1997, 1 ♀ (Yu. Verves).

6. *Blaesoxiphia plumicornis* (Zetterstedt, 1859)

Distribution: Palaearctic: Europe: AL, AT, BE, BG, BY, CH, CZ (Moravia), DE, DK, ES, FI, FR (mainland and Corsica), HR, HU, IT (mainland and Sardinia), LT, LV, MD, NL, NO, PL, RS, RU (Bashkortostan, Leningrad, Moscow, Orenburg and Voronezh Regions), SE, SK, UA, UK (England); North Africa: EG, PT (Madeira); Asia: AF, AM, AZ, CN (Jilin, Liaoning, Xinjiang), EG (Sinai), GE, IL, IR, JP (Honshu), KG, KP, KR, KZ, MN, RU (Altai, Amur, Chita, Dagestan, Irkutsk, Jewish Autonomy, Khabarovsk, Kurily, Magadan, Primorye and Sakhalin Regions), SA, TJ, TM, TR, UZ. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetrovsk, Kharkiv, Kherson, Kirovograd, Kyiv, Luhansk, Mykolaiv, Poltava, Rivne, Sumy, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae are internal parasites of nymphs and imagoes of locusts *Acrotylus insubricus* (Olsoufjev, 1929), *Aeropedellus variegartus* (Zakhvatkin, 1954), *Ailopus tergestinus* (Olsoufjev, 1929), *Calliptamus* sp. (Peris et al., 2001), *C. italicus* (Olsoufjev, 1929), *Chorthippus albomarginatus* (Zakhvatkin, 1954; Verves, 1974, 1987), *C. apricarius* (Verves, 1974, 1987), *C. brunneus* (Clemons, 1998, 2002; Richards & Waloff, 1954), *C. kozhevnikovi* (Olsoufjev, 1929), *C. longicornis* (Richards & Waloff, 1954), *C. millis* (Verves, 1974, 1987), *C. parallelus* (Clemons, 1998, 2002), *Chrotogonius turanicus* (Olsoufjev, 1929), *Dociostaurus maroccanus* (Melis, 1934), *Euchorthippus declivus*, *Euthysira brachyptera* (Pape, 1994), *Locusta migratoria* (Olsoufjev, 1929; Rohdendorf, 1932; Rukavishnikov, 1930), *Myrmeleotettix maculatus* (Richards & Waloff, 1954), *Oedaleus decorus* (Léonide & Léonide, 1979), *Oedipoda coerulescens* (Léonide & Léonide, 1979; Verves, 1974, 1987), *O. germanica* (Léonide & Léonide, 1979), *O. miniata*, *Omocestus heumonsi* (Olsoufjev, 1929), *O. ventralis* (Pape, 1994), *O. viridulus* (Clemons, 1998, 2002; Richards & Waloff, 1954), *Paracinema tricolor bisignata* (Peris et al., 2001), *Podisma pedestris* (Rohdendorf, 1970), *Pyrgodera armata*, *Pyrgomorpha conica*, *Ramburiella turcomanana* (Olsoufjev, 1929), *Schistocerca gregaria* (Bogush, 1959; Rohdendorf, 1932), *Sphingonotus mecheriae* (Olsoufjev, 1929), *Stauroderus scalaris* (Verves, 1974, 1987). Female fertility consists 75-150 larvae; maggots are developed usually 7 days in host body, puparium in soil – 12-22 days, 3rd stage larvae of last generation overwintering in soil. Females infest the hosts throughout its genitoanal opening at surface of soil. 3-4 generations per year were registered (Léonide & Léonide, 1979; Olsoufjev, 1929; Rukavishnikov, 1930; Zakhvatkin, 1954). Adult flies prefer dry meadows, steppe, bushes and ground roads and feed on flowering plants and aphis excreta (Verves & Khrokalo, 2006); were found in mountains at altitudes up to 2100 a. s. l. (Séguy, 1941).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, Krugly I., 6.06.-16.07.1986 and 22.06.1988, 6 ♂ 2 ♀ (Yu. Verves, S. Zrazhevsky). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, dry meadows near Trubin Lake, 23.08.2000, 2 ♂, 2 ♀. Dnipropetrovsk Region: Novomoskovsk District: Fedorivka village, meadows along Samara River, 1.08.2000, 1 ♂. Kyiv City: Desna District: "Druzhby Narodiv" park, dry meadows, 1.07.2001, 1 ♂; Holosiiv District: Williams street, dry meadows, 28.07.2001 and 19.08.2002, 2 ♂, 1 ♀. Kyiv Region: Kyiv-Sviatoslavsk District: 4 km N of Hostomel village, meadows at right bank of Irpin River, 8.07.2001, 1 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 4.06.2003, 2 ♂; Obukhiv District: 4 km W of Ukrainka City, border of pine forest nr Lake, at leaves and ground, 21.08.2004, 1 ♀; Vyshgorod District, Osischyna village, coast of Lake, meadows, 3.06.2007, 6 ♂, 1 ♀. Poltava Region: Pyryatyn District: Lelyaky village, meadows at bank of Uday River, 16.08.2010, 1 ♂, 1 ♀ (Yu. Verves). Luhansk Region: Stanychno-

Luhanska District: Nova Kindrashivka village, sandy area, 1.08.2008, 1 ♂ (A. Drozdovska). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13 and 15.08.2010, 2 ♀; Oleksandrivka village, "Gostra Mogyla" barrow, 14.07.2009, 1 ♀; Zhovtneve village, meadows, 13.07.2009, 2 ♂, 1 ♀ (V. Gorobchysyn and Yu. Verves). Sumy Region: Sumy District: Mogrytza village, 7-9.08.2009, 1 ♂ (Yu. Protzenko).

7. *Blaesoxipha redempta* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AL, AT, BA, BG, BY, CH, CZ (Moravia), DE, DK, ES, FI, FR (mainland and Corsica), HR, HU, IT (mainland and Sardinia), LT, MD, MK, MNE, MT, NL, NO, PL, RS, RU (Bashkortostan, Kursk, Orenburg, Perm, Ryazan, Tambov and Voronezh Regions), SE, SI, SK, TR, UA; North Africa: DZ, EG, ES (Canary Is.), LY, MA, TN; Asia: AF, AM, AZ, CN (Hebei, Heilongjiang, Jiangsu, Jilin, Liaoning, Shandong, Xinjiang), GE, IL, IQ, IR, KG, KZ, MN, RU (Amur, Astrakhan, Buryatia, Chita, Dagestan, Irkutsk, Krasnodar, Krasnoyarsk, Primorye, Stavropol, Tuva and Tyumen regions), SA, SY, TJ, TM, TR, UZ. Afrotropical: GH, SD, SO, YE. Oriental: IN (Jammu & Kashmir), TH. Australasian/Oceanian: US (Hawaii)⁶. UA: Cherkasy, Chernigiv, Crimea, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Luhansk, Mykolaiv, Odesa, Poltava, Ternopil, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae are parasites of adult locusts *Acrida deserta* (Olsoufjev, 1930), *Acrotylus insubricus* (Léonide & Léonide, 1971; Olsoufjev, 1930), *Ailopus chinensis* (Olsoufjev, 1930), *A. strepens* (Pape, 1994), *A. thallasimus* (Olsoufjev, 1930), *Anacridium aegyptium* (Künckel, 1905; Séguay, 1941; Zumpt, 1972), *A. melanorhodon* (Greathead et al., 1994), *Bryodema tuberculata* (Predtechensky, 1928, 1930), *Calliptamus italicus* (Charykuliev, 1976; Jannone, 1934; Léonide & Léonide, 1971; Olsoufjev, 1930; Rukavishnikov, 1930; Séguay, 1941), *C. spretus* (Séguay, 1941), *Celes variabilis* (Vorontzovsky, 1924), *Chorthippus* sp. (Artamonov, 1985), *Chorthippus albomarginatus* (Predtechensky, 1930; Zakhvatkin, 1954), *C. biguttulus* (Charykuliev, 1976), *C. mollis* (Pape, 1994), *Dericorus tibialis* (Olsoufjev, 1929), *Dociostaurus albicollis* (Vorontzovsky, 1924), *D. brevicollis* (Predtechensky, 1930; Vorontzovsky, 1924), *D. craussi* (Charykuliev, 1976), *D. maroccanus* (Baranov, 1924, 1925, 1927, 1942; Charykuliev, 1976; La Baume, 1918; Léonide, 1983; Léonide & Léonide 1971; Nijazbekov, 2007; Paoli, 1910, 1932, 1939; Vayssiére, 1921), *Eirenephillus longipennis* (Artamonov, 1985), *Euchorthippus pulvinatus* (Léonide & Léonide, 1971), *Gampsocleis schelkovnikovae* (Olsoufjev, 1930), *Gomphocerus sibiricus* (Vinokurov, 1927; Zakhvatkin, 1954), *Locusta migratoria* (Chaboussou et al., 1949; Greathead et al., 1994; Nikolsky, 1913; Olsoufjev, 1929, 1930; Polsman, 1929; Predtechensky, 1928, 1930; Quo, 1954; Remaudière, 1947; Roehrich, 1951; Rukavishnikov, 1930; Zumpt, 1972), *Melanomethis fuscipennis* (Charykuliev, 1976), *Mioscriptus wagneri* (Olsoufjev, 1930), *Oedaleus decorus* (Charykuliev, 1976; Léonide & Léonide, 1971; Vorontzovsky, 1924), *Oedipoda atripes* (Pape, 1994), *O. caerulescens* (Léonide & Léonide, 1971; Olsoufjev, 1930; Predtechensky, 1928, 1930; Verves, 1974, 1987), *O. germanica* (Pape, 1994), *O. miniata* (Charykuliev, 1976; Olsoufjev, 1930; Pape, 1994; Rukavishnikov, 1930), *O. schochi* (Olsoufjev, 1930), *Omocestus ventralis* (Pape, 1994), *Parapleurus alliaceus* (Olsoufjev, 1930), *Primnoa primnoides* (Artamonov, 1985), *Psophus stridulus* (Pape, 1994), *Pyrgodera armata* (Charykuliev, 1976), *Ramburiella turcomana* (Charykuliev, 1976; Olsoufjev, 1930), *Schistocerca gregaria* (Greathead et al., 1994; Künckel, 1905; Séguay, 1941; Zumpt, 1972), *S. nitens* (Chong, 1968; Hardy, 1980), *S. peregrina* (Séguay, 1941), *Sphingonotus mecheriae* (Rukavishnikov, 1930), *Stauroderus scalaris* (Verves, 1974, 1987; Zakhvatkin, 1954), *Stauronotus cruciatus* (Séguay, 1941), *Thisoesetrinus pterostichus* (Olsoufjev, 1929), and Tettigoniidae: *Barbitistes* sp. (Verves & Khrokalo, 2006), *Metrioptera affinis* (Olsoufjev, 1930), *Tettigonia viridissima* (Pape, 1994). In laboratory conditions larvae of fly developed in body of adult locusts *Melanoplus bivittatum*, *M. femur-rubrum*, *M. sanguinipes* (Rees, 1970). Female fertility consists 70-225 larvae; larvae are developed usually 4-7 (to 16) days in host body, puparium in soil – 15-20 days; 3rd stage larvae overwintering. 2-3 generation per year were registered. ♀ infested the flying hosts only; they larviposit at random on the hosts and the larvae seek and penetrate an intersegmental or arthrodial membrane (Baranov, 1925; Charykuliev, 1976; Olsoufjev, 1929, 1930; Pape, 1994; Predtechensky,

⁶ This species have been introduced to Sand Island, Honolulu, Hawaii, for biological control of the locust *Schistocerca nitens*, but not established (Chong, 1968).

1928; Rukavishnikov, 1930; Zakhvatkin, 1954). Flies feed at sugar liquid of homopters, flowering plants, and dead insects; distributed in different types of grass, steppe and desert localities, along ground roads etc. (Artamonov, 1993; Draber-Moňko, 1973; Verves & Khrokalo, 2006) and were collected at altitudes up to 2500 m a. s. l. (Pekbey & Hayat, 2013a).

Material examined: Crimea: Bakhchysaray District: Mangut Kale plateau, 570 m a. s. l. 19.08.1996, 1 ♀ (Yu. Verves). Luhansk Region: Stanychno-Luhanska District: Nova Kindrashivka village, sandy area, 1.08.2008, 1 ♀ (A. Drozdovska). Odesa Region: Ismail District, Maly Taman I., 15. 07.2003, 1 ♀ (Yu. Protzenko). Zakarpatty Region: Mizhgirrya District: Kolochava village, 2-4 km S, along stream Kvasonetz, 600-1000 m a. s. l., 12.08.1995, 8 ♂; 5 km W, alp steppe, 1400 m a. s. l., 14.08.1995, 1 ♀; Uzhgorod District: Nyzhne Solotvyno village, 98°33'N, 22°26'E, 140m a. s. l., meadow, 22.08.2014, 1 ♀. Zaporizhzhya Region: Melitopol City: "Kamyany Mogily" State Reserve, at stones, 28.08.1997, 1 ♀; Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, 23.08.1997, 4 ♀; (Yu. Verves).

8. *Blaesoxipha rufipes* (Macquart, 1839)

Blaesoxipha bakweria Lehrer and Omgba, 2013, **syn. nov.**

Distribution: Palaearctic: Europe: ES, FR (Provence and Corsica), HR, IT (mainland), UA; North Africa: DZ, ES (Canary Is.), EG, MA, PT (Azores); Asia: AF, AM, AZ, CN (Liaoning, Neimenggu, Sichuan), CY, EG (Sinai), GE, IL, IR, JP (Honshu), JO, KR, KZ, KG, LB, MA, MN, RU (Astrakhan Region, Dagestan, Kurgan Region, Primorye, Stavropol Region, Tuva), SA, SY, TJ, TM, TR, UZ. Nearctic: US (California)⁷. Afrotropical: AO, BJ, BW, CG, CI, CM, CV, ET, GM, KE, KM, ML, NA, NG, SL, SN, TZ, TG, YE, UG, ZA (Eastern Cape, Gauteng, Western Cape), ZM. Madagascan: MG. Oriental: CN (Guangdong, Guizhou, Yunnan), ID (Java), IN (Meghalaya, Tamil Nadu), JP (Ryukyu Is.) LA, LK, MY (Sabah, West MY), PH (Palawan, Tawi Tawi), PK, TH, VN. Australasian/Oceanian: AU (New South Wales, Northern Territory, Queensland), FJ, ID (Ambo I.), NC, PW (Ngerkabesang I.), PG (Bismarck Arch., New Guinea); SB (Guadalcanal I.), US (Hawaii)⁸, VU. UA: Zaporizhzhya Region.

Larvae are highly effective endoparasites of nymphs and adults of different brachiceran orthopteran hosts: *Acanthacris ruficornis lineata* (Greathead et al., 1994), *Acrida oxycephala* (Rohdendorf, 1930), *Ailopus thalassinus*, *Anacridium aegyptium*, *A. moestum* (Verves, 1985), *Atractomorpha lata* (Miura & Ohgushi, 2010), *Calliptamus coelesyriens intricatus* (Charykuliev, 1976), *C. italicus* (Léonide, 1983), *Chortoicetes terminifera* (Baker, 1995; Baker & Barchia, 1997; Baker et al., 1982; Farrow, 1982; Gurney, 1908; Kaldor & Baker, 1996; Lopes, 1955), *Cyrtacanthacris tatarica*, *Diabolocatantops axillaris* (Greathead et al., 1994), *Dociostaurus kraussi* (Charykuliev, 1976), *D. maroccanus* (Charykuliev, 1976; Dempster, 1957; Hernandez, 1992; Léonide, 1983), *D. nigrogeniculatus* (Verves, 1985), *Eumigus* sp. (Peris et al., 2001), *Gastriomargus musicus* (Common, 1948), *Epacromius coerulipes* (Verves, 1985), *Kosciuscola cognatus* (Pape, 1994), *Locusta migratoria* (Baker, 1975, 1978; Olsoufjev, 1930), *Locustana pardalina* (Van Someven, 1965), *Mesasippus kozhevnikovi* (Verves, 1985), *Monistria concinna*, *M. discrepans* (Allsopp, 1978), *Oedaleus* sp. (Verves, 1985), *O. senegalensis* (Amené & Vajime, 1990; Greathead et al., 1994), *Oedipoda miniata* (Verves, 1985), *Phaulacridium vittatum* (Oliver & Croft, 2010), *Phymateus morbillosus* (Greathead et al., 1994; Verves, 1985), *Poecilocerus pictus* (Verves, 1985), *Qualetta maculata* (Pape, 1994), *Ruspolia punctipennis*, *Kraussaria angulifera* (Greathead et al., 1994), *Schistocerca gregaria* (Bogush, 1959; Greathead et al., 1994; Rohdendorf, 1930), *Sphingoderus carinatus*, *Stauronotus* sp. (Verves, 1985), *Tmethis* sp. (Pape, 1994), *Zonocerus elegans* (Greathead et al., 1994), *Z. variegatus* (Armand & Agnès, 2005; Chapman & Page, 1979; Chapman et al., 1986; De Gregorio, 1982; Lehrer & Omgba, 2013; Paraiso et al., 1992; Taylor, 1964; Toye, 1982). Adult fly females parasitized mainly adult creeping females but also but also attacked final instar female nymphs and adult males of hosts (Greathead et al., 1994). 1-4 larvae placed between thoracic muscles in one host; if more than one larva, the host died (Allsopp, 1978). The development of larvae passed during 4-9 days, pupae in soil – 4-15 days (Allsopp, 1978; Baker,

⁷ this species have been introduced into USA from Australia and Pakistan reiterated since 1893; the invasion of American locusts by larvae of this species proved not effective (Clausen, 1978; Rees, 1985)

⁸ introduced: Davis, 1971; Rees, 1985.

1995; Charykuliev, 1976; Taylor, 1964). Adult flies feed at flowering plants and aphid excreta and prefer xerophytic sandy areas in steppes and semideserts (Verves & Khrokalo, 2006).

Material examined: Zaporizhzhya Region: Novomoskovsk District, Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 2 ♂ (Yu. Verves).

9. *Blaesoxipha ungulata* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AD, BG, ES, CH, CZ (Bohemia and Moravia), FR (mainland), IT (mainland), PL, RS, RU (Perm Region), UA; North Africa: DZ; Asia: AZ, GE, RU (Krasnodar and Rostov Regions), TR. UA: Cherkasy, Crimea, Dnipropetivsk and Donetsk Regions.

Larvae are known as endoparasites of different orthopteran hosts, including grasshoppers *Barbitistes fischeri* (Léonide, 1965), *Tettigonia viridissima* (Séguy, 1941) and acrids *Anacridium aegyptium* (Baer, 1921; Léonide & Léonide, 1983), *Calliptamus* sp. (Peris et al., 2001), *Chorthippus mollis* (Léonide & Léonide, 1983), *Dociostaurus maroccanus* (Léonide & Léonide, 1983; Séguy, 1941), *Pyrgomorpha conica* (Léonide & Léonide, 1983). Adult flies were collected on flowers and leaves in humid ecosystems (bushes, meadows, forests etc. (Gudjabidze, 1970; Séguy, 1941). Adult flies were collected at altitudes to 2540 m o. s. l. (Pekbey & Hayat, 2013a).

Material examined: Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, bank of Samara River, humid meadow, at flowers of *Heracleum* sp., 5.08.2000, 2 ♂.

10. *Blaesoxipha unicolor* (Villeneuve, 1912)

Distribution: Palaearctic: Europe: AD, BG, CH, ES, FR (mainland), HU, IT (mainland), RS, RU (Bashkortostan, Leningrad, Orenburg, Kuibyshev and Tver Regions), UA; Asia: AZ, CN (Liaoning, Neimenggu), GE, KZ, MN, RU (Dagestan, Altai, Chita and Irkutsk Regions), SA, TR. Oriental: CN (Guizhou), TH. UA: Cherkasy, Crimea, Dnipropetivsk, Kherson, Mykolaiv*, Poltava and Zaporizhzhya Regions.

Larvae are the parasites of locusts *Aeropedellus variegates* (Zakhvatkin, 1954), *Bryodema* sp. (Verves, 1984), *Calliptamus italicus* (Verves, 1985), *Chorthippus albomarginatus*, *C. apricarius*, *C. biguttulus* (Zakhvatkin, 1954), *Dociostaurus genei*, *D. maroccanus* (Verves, 1985), *Gomphocerus sibiricus* (Zakhvatkin, 1954), *Euchorthippus pulvinatus*, *Oedaleus decorus*, *Ramburiella hispanica*, *Sphingonotus caerulans* (Verves, 1985), *Stauroderus scalaris*, *Stenobothrus eurasius*, *S. nigromaculatus* (Zakhvatkin, 1954). Flying females larviposit on the body surface of sitting or creeping hosts; then larvae penetrating through the intersegmental membrane (Zakhvatkin, 1954). Flies feed on flowering plants; prefer xerophytic or mesophytic meadows, steppe, sandy areas, ground roads (Verves & Khrokalo, 2006). Female fertility consists 70-120 larvae; 2 generation per year registered. Flies were collected at altitudes to 700 m o. s. l. (Wei, 2007).

Material examined: Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, feather grass steppe, 6. & 8.08.2000, 32 ♂. Kherson Region: Genichesk District: Chernigivka village, old mulberry plantation, on drop, 20. and 24.07.1998, 2 ♂. Mykolaiv Region: Ochakiv District: Parutino village, debris of antic Olvia City, 16.07.2006, 1 ♂. Poltava Region: Pyryatyn District: Grabarivka village, meadows near Ruda River, 15.07.2009, 1 ♂. Zaporizhzhya Region: Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 1 ♂ (Yu. Verves).

11. *Servaisia* (s. str.) *erythrura* (Meigen, 1826)

Distribution: Palaearctic: Europe: AT, BG, BY, CH, CZ (Bohemia and Moravia). DE, DK, EE, ES, FI, FR (mainland), GR (mainland), HR, HU, IT (mainland), LT, LV, PL, RO, RS, RU (Kaluga, Leningrad, Moscow, Orenburg, Perm, Voronezh and Yaroslavl Regions), SE, SK, UA, UK (England); Asia: AM, AZ, CN (Gansu, Liaoning, Neimenggu, Shanxi, Qinghai, Xinjiang), GE, KG, KZ, MN, RU (Altai, Buryatia, Chita, Dagestan, Irkutsk, Khabarov, Krasnodar, Primorye, Stavropol and Tobol Regions), TJ, TM, TR. UA: Cherkasy, Kyiv and Zakarpattya Regions.

Larvae are the internal parasites of nymphs and adult acridids *Chorthippus apricarius*, *C. biguttulus* (Olsoufjev, 1929), *C. longicornis*, *Chrysochraon dispar* (Verves, 1985), *Omocestus*

petraeus (Pape, 1994), *O. viridulus* (Olsoufjev, 1929), *Pezoterttix* sp. (Portschinsky, 1894), *Stenobothrus lineatus* (Pape, 1994). Adult flies feed on flowers of *Rhamnus frangula* L. (Draber-Mońko, 1973), *Bupleurum* sp., *Euphorbia* sp. (Zakhvatkin, 1954), and associated with cultural steppes (Kejval, 1998), chalk grasslands and limestone hillsides (Rudzinski & Flügel, 2007), tips of hills in xerophytic stations (Zakhvatkin, 1954). In the northern part of specific areal flies prefers flats, and in southern one they live in mountains (Rohdendorf, 1928) up to altitude 2600 m o. s. l. (Pekbey & Hayat, 2013a).

Material examined: Kyiv City: Holosiiv District, "Sovky hole", humid meadow, at flowers of *Taraxacum officinale*, 2.09.2013, 1 ♂ (Yu. Verves).

12. *Servaisia (s. str.) rossica* (Villeneuve, 1912)

Distribution: Palaearctic: Europe: AT, BG, DE, CH, CZ (Moravia), DK, EE, ES, FI, FR (mainland and Corsica), HR, HU, IT (mainland and Sicily), MK, NO, PL, RO, RS, RU (Bashkortostan, Kirov, Kursk, Moscow, Leningrad, Orenburg, Ryazan, Tambov, Tatarstan and Voronezh Regions), SE, SK, UA, UK (England); North Africa: MA; Asia: AM, AZ, CN (Heilongjiang, Jilin, Liaoning, Neimenggu, Shanxi, Sichuan, Xinjiang), GE, KG, KZ, MN, RU (Altai, Amur, Buryatia, Irkutsk, Khabarovsk, Krasnodar, Primorye and Stavropol Regions); SY, TJ, TR, UZ. UA: Cherkasy, Chernigiv, Crimea, Dnipropetivsk, Donetsk, Khmelnytsky, Kyiv, Poltava, Ternopil and Zakarpattya Regions.

The larvae are the parasites of nymphs and adults of acridids *Chorthippus albomarginatus*, *C. apricarius* (Verves, 1974, 1987), *C. biguttulus* (Léonide, 1967; Léonide & Léonide, 1971), *C. brunneus* (Léonide & Léonide, 1971; Verves, 1974, 1987), *C. mollis* (Léonide, 1967; Léonide & Léonide, 1971), *C. parallelus* (Zakhvatkin, 1954), *Dociostaurus maroccanus* (Léonide, 1983), *Eirenephillus longipennis* (Artamonov, 1988), *Euchorthippus declivus* (Léonide, 1967; Léonide & Léonide, 1971), *E. pulvinatus* (Léonide & Léonide, 1971), *Gomphocerus rufus* (Pape, 1994), *G. sibiricus* (Rohdendorf, 1937), *Locusta migratoria* (Olsoufjev, 1930; Predtechensky, 1930), *Oedipoda germanica* (Pape, 1994), *Omocestus haemorrhoidalis* (Verves, 1974, 1987; Zakhvatkin, 1954), *O. ventralis* (Pape, 1994), *O. viridulus*, *Primnoa primnoides* (Olsoufjev, 1930), *Stauroderus scalaris* (Verves, 1974, 1987). The larvae develop in the host abdomen during 9 days, the owner dies on the 8th day from the beginning of parasitism. Larva in the soil was 2 months, and then formed a puparium. Larvae emerge from the locust through the back of the abdomen, without damaging locust integument (Artamonov, 1988). Females lay their larvae, piercing intersegmental membrane of the host abdomen by sharp ovipositor (Léonide, 1967). This species is confined to meso- and xerophytic meadows, fallow, edges of clearing mesophytic forests (Verves & Khrokalo, 2006), steppes and deserts (Trofimov, 1969). Flies set on leaves of grasses, shrubs (Artamonov, 1988), stones and creaceous hills (Emden, 1954). Adults feed on aphids sugar liquid (Artamonov, 1985), flowers of *Euphorbia esula* (Séguy, 1941), *Pastanaca sativa*, *Seleranthus annuus* (Draber-Mońko, 1973) and were collected at altitudes up to 2400 m a. s. l. (Pekbey & Hayat, 2013a).

Material examined: Dnipropetivsk Region: Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, bank of Samara River, meadow, at flowers of *Heracleum* sp., 5.08.2000, 6 ♂; feather grass steppe, 6-8.08.2000, 44 ♂ (Yu. Verves).

13. *Tephromyia grisea* (Meigen, 1826)

Distribution: Palaearctic: Europe: AL, AT, BG, BE, BY, CH, CZ (Moravia), DE, ES, FR (mainland), HU, IT (mainland and Sicily), MD, PL, RO, RS, RU (Bashkortostan, Rostov, Leningrad and Voronezh Regions), SI, SK, UA. Asia: AM, AZ, CN (Xinjiang), GE, JO, KZ, MN, RU (Altai, Novosibirsk and Primorye Regions), TR. UA: Cherkasy, Dnipropetivsk, Donetsk, Kharkiv, Khmelnytsky, Kyiv, Poltava, Ternopil and Volyn Regions.

Larvae are internal parasites of nymphs and adults of *C. brunneus*, *C. jacobsii* (Tatsuta, 2002), *Chorthippus mollis*⁹ (Léonide & Léonide, 1986), *Dociostaurus maroccanus* (Paoli, 1919, 1939), *Oedipoda coeruleascens* (Verves & Khrokalo, 2006). Flies were collected at altitudes up to 2100 m o. s. l. (Pekbey & Hayat, 2013a) at meso- and xerophytic meadows, steppe, clearings, tips of

⁹ in laboratory conditions

hills; feed at flowers, sometimes visit faeces, decaying meat, small corpses (Verves & Khrokalo, 2006).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 3.07.1988, 1 ♂ (S. Zrazhevsky).

**Tribe *Sarcophagini*
Subtribe *Helicophagellina***

14. *Helicophagella* (s. str.) *agnata* (Rondani, 1860)

Distribution: Palaearctic: Europe: AL, AT, BE, BG, CH, CZ (Bohemia and Moravia), DE, DK, FI, FR (mainland and Corsica), HR, IT (mainland and Sicily), NL, NO, PL, RO, RS, RU (Karelia), SE, SK, ES, UA, UK (England). Asia: KZ. UA: Cherkasy, Chernigiv*, Chernivtsi, Ivano-Frankivsk, Kherson, Kyiv, Poltava and Zakarpattya Regions.

Larvae are necrophagous or pseudoparasitoids of terrestrial snail *Cantareus aspersus* (Coupland & Baker, 2004; Emden, 1954) and reared in the laboratory on freshly killed snails (Riche et al., 2011). This woodland species accompanying both deciduous and coniferous forests being clearly focused in montane beech woods (*Fagus*) at altitudes up to 1500 m a. s. l.; more distributed in little destroyed forested montane ranges (Povolný & Verves, 1990, 1997). In Sicily flies were collected in representative habitat of the meso-thermophilic association characteristics of North Sicily with annual precipitations between 600-900 mm on silicates. Its phytocenological characteristics is *Erico arboreae* - *Quercetum ilicis*: *Quercus* spp. + *Erica arborea*, etc (Povolný, 1999).

Material examined: Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 6.08.1999, 1 ♂. Poltava Region: Pyryatyn District: environs of Grabarivka village, meadows near Ruda River, 15.07.2009, 1 ♂ (Yu. Verves).

15. *Helicophagella* (s. str.) *crassimargo* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AT, BA, BE, BG, CH, CZ (Bohemia and Moravia), DE, DK, ES, FI, FR (mainland), GR (mainland and Crete), HR, HU, IE, IT (mainland), LT, MD, MK, NL, NO, PL, RO, RS, RU (Karelia, Leningrad, Lipezk, Moscow, Voronezh and Yaroskavl Regions), SE, SI, SK, UA, UK (England). Asia: AZ, GE, KG, KZ, RU (Altai, Kabardi-Balkaria), TR. UA: Cherkasy, Chernigiv, Chernivtsi, Ivano-Frankivsk, Kyiv, Odesa, Poltava, Volyn, Zakarpattya and Zhytomyr Regions.

Larvae are essentially copro- and necrophagous (Sychevskaya, 1965), prefer the small corpses (Blackith & Blackith, 1990), and bred from snail *Helicella virgata* (Keilin, 1919), but snails are not the normal breeding material for this fly (Blackith et al., 1994; Riche et al., 2011). This species shows a considerable hypsometric potency reaching elevations up to 2000 m a. s. l. It avoids forests preferring open landscape and dry habitats with poor vegetation including podzol soils; were collected in gardens and on flood markets too. Adults feed at flowering plants and are readily attracted to decaying organic substrates: faeces, excrement, cheese, small carcasses (Povolný & Verves, 1990, 1997).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 3.07.1988, 1 ♂ (S. Zrazhevsky). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 11.06. and 10.07.2000, 2 ♂. Kyiv City: Desna District: "Druzhby Narodiv" park, meadows nr Lake, 8.07.2005, 1 ♂; Holosiiv District: Baykove Cemetery, 13.07.2003, 2 ♂; "Didorovsky" pond, humid banks, 25.08.1999 and 12.09.2005, 2 ♂, 1 ♀; National Exhibition Centre, busches, 27.08.1999, 3 ♂; Williams street, dry meadows, 28.07.2001 and 19.08.2002, 3 ♂; Obolon District: Verbne Lake, shores, 31.08.2004, 1 ♂; Shevchenko square, shores of Lakes, 27.09.2006, 2 ♂. Kyiv Region: Kyiv-Sviatoshyn District: 4 km N of Hostomel village, meadows at right bank of Irpin River, 8.07.2001, 3 ♂ (Yu. Verves).

16. *Helicophagella* (s. str.) *noverca* (Rondani, 1860)

Distribution: Palaearctic: Europe: BE, BG, CH, CZ (Bohemia and Moravia), DE, ES, FR (mainland), GR (mainland), HU, IT (mainland), MK, MNE, MT, NL, NO, PL, RO, RS, SK, SE, UA;

North Africa: EG; Asia: AZ, CY, GE, IL, RU (Karachay-Cherkessia), TR. UA: Chernivtsi, Crimea, Ivano-Frankivsk, Kyiv and Zakarpattya Regions.

Larvae develop in dead terrestrial snails *Helix pomatia* (Schmitz, 1910, 1917) and known as facultative parasitoids of living *Caucasotachea atrolabiata* (Coupland & Baker, 2004; Portschninsky, 1887) and coprophagous; in laboratory conditions the maggots have been reared on horse meat (Eberhardt, 1955), dead snails and beef (Richet et al., 2011). Adults accompany the forest belt but frequent chiefly the warmer lower elevations (vegetation tiers), and are relatively rare in true mountain forests. Flies feed at flowers, and are readily attracted to decaying flesh, faeces, excrement (Povolný & Verves, 1990, 1997), visiting flood markets (Aradi & Mihályi, 1971).

Material examined: Kyiv City: Podil District: "Syretz" residential community, park, humid meadow nr pond, 15.07.2005, 1 ♂. Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, tip of hill, beech forest, 98°33'N, 22°26'E, 200 m a. s. l., 18.08.2014, 2 ♂ (Yu. Verves).

17. *Helicophagella (s. str.) novercoides* (Böttcher, 1913)

Distribution: Palaearctic: Europe: AL, AT, BE, BG, CH, DE, ES, FR (mainland), GR (mainland), HR, HU, IT (mainland, Sardinia and Sicily), MNE, MT, RS, SK, UA; North Africa: EG; Asia: AZ, CY, IL, TR. UA: Chernivtsi and Crimea Regions.

This species reared in the laboratory on freshly killed snails (Richet et al., 2011). Imagoes are bioindicators of limestone biotopes at altitudes up to 1700 m o. s. l., particularly within forest limits (Povolný, 1999; Povolný et al., 1993).

Material examined: Crimea: Bakhchysaray District: Beregove village, on rotten fruits, 18.08.2001, 2 ♂ (Yu. Verves).

18. *Helicophagella (s. str.) pseudognata* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: UA; Asia: AM, AZ, GE, KG, RU (Chechnya, Dagestan and Kabardi-Balkaria Regions). UA: Crimea.

Flies prefer montaneous bushes.

Material examined: Crimea: Alushta City: 9 km W, oak grove, 400 m a. s. l., 16.08.1976, 1 ♂ (Yu. Verves).

19. *Helicophagella (s. str.) rosellei* (Böttcher, 1913)

Distribution: Palaearctic: Europe: AT, BE, BG, CH, CZ (Bohemia and Moravia), DE, DK, ES, FR (mainland); HR, HU, IT (mainland and Sicily), MK, NL, NO, PL, RO, RS, RU (Karelia), SK, UA, UK (England); North Africa: EG; Asia: RU (Altai, Amur, Khabarovsk and Primorye Regions). UA: Chernivtsi, Ivano-Frankivsk, Kyiv and Zakarpattya Regions.

Larvae are bred from dead terrestrial snail (Hovemeyer, 1985) and reared in the laboratory on freshly killed snails (Richet et al., 2011). Flies accompany the forest belt, especially the natural mountain forests; they prefer dry areas and beech forests in Central Europe and occupied clearings exposed to the sun's rays (Povolný et al., 1993; Povolný & Verves, 1997) up to 2300 m a. s. l. in association *Caricion curvulae* (Menzel & Ziegler, 2002).

Material examined: Kyiv Region: Bila Tserkva City: "Oleksandria" dendrological park, 3.05.2009, 2 ♂. Zakarpattya Region: Mizhgirrya District: 2-4 km S of Kolochava village, along stream Kvasovetz, 600 and 1000 m a. s. l., 12-13.08.1995, 2 ♂ (Yu. Verves).

20. *Helicophagella (Parabellieria) dreyfusi* Lehrer, 1994¹⁰

Distribution: Palaearctic: Europe: AL, MD, MK, RO, RU (Bashkortostan), UA; Asia: AF, AM, AZ, CN (Neimenggu, Ningxia, Xinjiang), GE, IL, IR, IQ, KG, KZ, MN, PA, RU (Alania, Buryatia, Chechnya, Chita, Dagestan and Ingushetia Regions), TJ, TR, TM, UZ. Oriental: PK (Baluchistan). UA: Crimea and Kherson Regions.

Larvae of this hemisynthropic species are developed in faeces and fecal mass in lavatories and pork dung (Gadzhey, 1963; Ilyashenko, 1962). This species has also been reared as a facultative

¹⁰ This species had been not separated from *Helicophagella maculata* (Meigen, 1835) by all authors since Lehrer's publication (1994).

parasitoid from terrestrial gastropod *Theba pisana* (Coupland, 1994). Flies prefer steppes, deserts and cultural landscapes; absent in mountains (Sychevskaya, 1970; Trofimov, 1969).

Material examined: Crimea: Bakhchysaray District: Beregove village, flood market, 16.08.2001, 2 ♂ (Yu. Verves).

21. *Helicophagella (Parabellieria) macrura* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: BG, HU, SK, UA; Asia: KG, RU (Altai, Amur, Astrakhan, Karachay-Cherkesia, Khabarovsk, Magadan, Novosibirsk, Omsk, Primorye, Tyumen and Yakutia Regions). UA: Cherkasy, Kharkiv and Poltava Regions.

Larvae are developed in human faeces; 3rd stage larvae overwintering; adult flies feed at sugar substrates (Sychevskaya, 1978).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 30 km N of Kaniv, 9.07.1988, 1 ♂ (Yu. Verves).

22. *Helicophagella (Parabellieria) melanura* (Meigen, 1826)

Distribution: Nearctic: CA (British Columbia, Quebec), US (Massachusetts, New York, West Virginia). Palaearctic: Europe: AL, AT, BA, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland and Corsica), HU, IE, IT (mainland, Sardinia and Sicily), LT, LU, LV, MD, MK, MNE, MT, NL, NO, PL, PT, RO, RS, RU (Bashkortostan, Ivanovo, Karelia, Leningrad, Moscow, Murmansk, Pskov, Rostov and Voronezh Regions), SE, SI, SK, TR, UA, UK (England, Scotland, North IE); North Africa: DZ, EG, ES (Canary Is.), LY, MA, TN; Asia: AF, AM, AZ, CN (Anhui, Beijing, Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shandong, Shanxi, Shaanxi, Shandong, Shanghai, Shanxi, Sichua, Tianjin, Xinjiang), CY, EG (Sinai), GE, IL, IR, IQ, JO, JP (Hokkaido, Honshu, Kyushu, Shikoku, Tsushima Is.), KG, KP, KR, KZ, LB, MN, PA, RU (Alania, Altai, Amur, Buryatia, Chechnya, Chita, Dagestan, Ingushetia, Kabardi-Balkaria, Kamchatka, Karachay-Cherkesia, Khabarovsk, Koryak, Krasnodar, Krasnoyarsk, Kurily Is., Magadan, Novosibirsk, Primorye, Sakhalin, Tomsk, Tyumen, Stavropol and Yakutia Regions), SY, Tibet, TJ, TM, TR, TW, UZ. Afrotopical: MR. Oriental: CN (all Provinces), IN (Bihar, Jammu and Kashmir, Tamil Nadu); JP (Ryukyu Is.), MY (West MY), PK, TW. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattyia, Zaporizhzhya and Zhytomyr Regions.

Larvae mostly coprophagous (Rohdendorf, 1937, 1959; Sukhova, 1952; Trofimov, 1965, 1969; Zakharova, 1961, 1965); especially are developed in faeces and dung of cattle, fox, sheep and other mammals (Blackith et al., 1994; Martínez-Sánchez et al., 2000a, b; Olechowicz, 1976; Papp, 1985, 1995; Séguay, 1941; Skidmore, 1991), human faeces and latrine (Feng et al., 1990; Gadzhey, 1963; Stackelberg, 1956; Sychevskaya, 1960; Zakharova, 1961, 1965), occasionally in human corpses (Guo et al., 2011; Mohamed Aly & Wen, 2013; Mohamed Aly et al., 2012), different vertebrate animals (Anderson & VanLaerhoven, 1996; Rohdendorf, 1959; Stackelberg, 1956; Sukhova, 1952) and decaying meat (Artamonov, 1983). This species is known to breed in dog and fox faeces on light sandy soils and near paths much used by dogs, a medium likely to dehydrate quickly and in which the rapid development of a few larvae could be advantageous (Richet et al., 2011). Larvae are facultative predatory of other coprophilous maggots (Povolný et al., 1993). Hemisynanthropic culturophile species, preferring mesophytic phytocoenoses with shrubs (Aradi & Mihályi, 1971; Nandi, 2002; Rohdendorf, 1959). Maggots caused facultative traumatic tissue and occasional intestinal myiasis of humans, hedgehog, rats, rabbits (Chigusa et al., 1997; Emden, 1954; James, 1947; Nielsen et al., 1978; Rohdendorf, 1959); found also in nests of birds *Chelidon rustica* (Audsent, 1942; Séguay, 1930), bred from larvae of beetle *Oryctes nasicornis* (Emden, 1950), live and dead terrestrial snails *Arion hortensis* (Coupland & Baker, 2004; Keilin, 1919, 1921), *A. rufus* (Kühlhorn, 1986), *Cantareus aspersus* (Coupland & Baker, 2004; Keilin, 1919, 1921), and locust *Chorthippus brunneus* (Verves & Khrokalo, 2006). Flies feed at flowers, faeces, decomposed fruits (Draber-Mońko, 1973; Greenberg, 1971; Jędrzejewska-Szmk & Zych, 2013; Povolný & Verves, 1997; Prado e Castro et al., 2010; Verves, 2003), especially visit the small vertebrate corpses (Blackith & Blackith, 1990; Sukhova, 1952; Yang et al., 2010) and were collected at altitudes up to 3000 m a. s. l. (Feng, 2006). Adults are responsible for transfer of bacterial

disease and eggs of helminthes (Alakhverdyantz & Zakharova, 1961; Greenberg, 1971; Shura-Bura, 1952).

Material examined: Cherkasy Region: Cherkasy City: 28.05.1988, 1 ♂ (S. Zrazhevsky); Kaniv District: Kaniv State Nature Reserve, Krugly I., 10.06.1986, 1 ♀ (Yu. Verves); hombean forest, 2-19.08. 1988, 5 ♂ (S. Zrazhevsky); Zarichchya I., 30.07.1968, 1 ♂ (O. Viktorov-Nabokov); Zmiyini Is., coast of Kaniv Lake, 23.05.2003, 1 ♂; Uman City: "Sofiivka" dendrological park, 13-14.06.2006, 18 ♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 12.07. and 18-19.08.2000, 4 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest, 6.08.1999, 2 ♂. Crimea: Bakhchysaray District: Beregove village, sandy area, 1-11.08.2004, 5 ♂, 1 ♀; Lenino District: Qazan Tip State Reserve, 17-27.07.2007, 2 ♀. Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, bank of Samara River, dry meadows, at flowers of *Heracleum* sp., 4-11.08.2000, 2 ♂; 5.08.2000, 13 ♂; Fedorivka village, meadows along Samara River, 1.08.2000, 3 ♂. Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, sandy area, 26.07.1998, 1 ♂; Skadovsk District: Novo-Oleksiyivka village, near poultry farm, at horse and pig dung, 5.-6.09.1961, 2 ♀ (O. Viktorov-Nabokov). Kyiv City: Desna District: "Druzhby Narodiv" park, sandy coast and dry meadow, 1.07.2001 and 8.07.2005, 2 ♂; 5 km E of "Lisova" subway-station, mixed forest and bushes near Lisove Lake, 20.07.2004, 1 ♂, 7 ♀; Dnipro District: 2 km N of Moscow bridge, island on Dnipro, 30.05. and 29.08.2008, 9 ♂; Kozachy I. at Dnipro, 9.09.2009, 2 ♂; Rayduzny Massive, bushes on bank of Malynivka Lake, 23.06.2005, 2 ♂; Holosiiv District: "Didorovsky" pond, humid banks, 25.08-4.09.1999, 11.07-9.08.2002, ♀; 28.06.2004, 12.09.2005, 42 ♂, 4 ♀; Kozacha street, wall of byilding, 7.07.2005, 1 ♂; Olzhyn I. at Dnipro, 10 km S of Kharkiv bridge, 8.07.2009, 1 ♂; "Sovky hole", coast of pond, humid meadow, 10.09.2000, 30.07.29.08.2002, 27.06.-1.08.2003, 27.08.2004, 11.07.2005 and 9.06.2011, 55 ♂, 3 ♀ (Yu. Verves); Uralska street, 3-6.07.2009, 2 ♀ (A. Drozdovska); Vasylkivska street 98, yard, 9.05. and 12.07.2002, 2 ♂; Williams street, dry meadows, 10-28.07.2001 and 12-19.08.2002, 14 ♂, 1 ♀; Zhukiv I. at Dnipro, 20 km S of Kyiv, 9.09.2002, 2 ♂, 1 ♀; Obolon District: island at Dnipro, N 50°30'25", E 30°31'16", 26.05., 16.06. and 22.09.2011, 24 ♂, 1 ♀; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000, 15.07.2005, 4 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 27.08.2003, 1 ♂. Kyiv Region: Boryspil District: Rozhny village, bushes at coast of Dnipro, 15-22.08.1999, 19 ♂, 1 ♀; Brovary District: Zazymya village, meadows, 1.08.2001, 2 ♂; Kyiv-Sviatoshyn District: 4 km N of Hostomel village, meadows at right bank of Irpin River, 8.07.2001, 1 ♂; 2-4 km E of Irpin City, forest nr bog, 26.04.2003, 1 ♂; 10 km S of Kyiv, Kruglyk village, meadow nr pond, 30.04.2000, 1 ♂; Moshchun village, humid meadows near forest stream, 8.09.2003, 1 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 15.06.2004, 1 ♂; Obukhiv District: Velyki Dmytryovychi village, grass coast of stream and asp forest nr bog, 8.09.1995 and 4.07.1999, 3 ♂; Ukrainka City, dry meadow and bushes, 14.09.2003 and 21.08.2004, 3 ♂; Rokytne District: Busheve village, N 49°39', E 30°35', open cast, 27.07.2012, 9 ♂, 3 ♀; Vyshgorod District: Osischyna village, meadows, 3.06.2007, 4 ♂, 1 ♀ (Yu. Verves). Luhansk Region: Stanychno-Luhanska District: Nova Kindrashivka village, sandy area, 1.08.2008, 1 ♂; Sverdlovsk District: Provallya village, 27-29.07.2008, 1 ♂ (A. Drozdovska). Mykolaiv Region: Ochakiv District: Kinburn sandy area, 16.05.2003, 1 ♂ (Yu. Protzenko); Parutino village, debris of antic City Olvia, 16.07.2006, 2 ♂, 2 ♀ (Yu. Verves). Poltava Region: Pyryatyn District: Bilotzerkivtsi village, "Murentzeve" locality, 15.08.2010, 1 ♂ (O. Tkachenko); Davydivka village, meadows, 15.07.2009, 3 ♂; Grabarivka village, meadows near Ruda River, 15.07.2009, 1 ♂; Keybalivka village, meadows at bank of Uday River, 18.08.2010, 1 ♂; Kharkivtsi village, "Velyki Solontzi" locality", 13-14.07.09, 1 ♂, 3 ♀ (Yu. Verves); Lelyaky village, 21.7.2005, 1 ♀; Mala Krucha village, 11-13.07.08, 1 ♂ (A. Drozdovska); Masalske village, meadows at bank of Uday River, 14.08.2010, 1 ♀ (Yu. Verves); Povstyn village, locality "Burty", meadows, 12.07.2009, 1 ♂ (V. Gorobchysyn); Usivka village, meadows, 10. and 16.07.2009, 2 ♂ (Yu. Verves). Sumy Region: Sumy District: Vakolovshchyna village, bog, 5-14.06.2007, 1 ♂ (O. Govorun); Romny City: banks of Romenka River, meadows and bushes, 21-30.08.2009, 26 ♂. Zakarpattyia Region: Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140 m a. s. l., 16-20.08.2014, 1 ♂. Zaporizhzhya Region: Berdyansk City, sandy spit at Azov Sea, 14-17.08.1994, 6 ♂, 2 ♀; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 10-27.08.1997, 39 ♂, 1 ♀; Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, meadows and

bushes, 23.08.1997 and 15.06.2008, 7♂; Kyrylivka village, Fedotova kosa, sandy area nr sea coast, 16-17.08.1997, 4♂, 2♀ (Yu. Verves).

Subtribe Heteronychiina

23. *Discachaeta arcipes* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AT, BE, BG, CH, CZ (Bohemia and Moravia), DE, ES, FR (mainland), HR, HU, IT (mainland), NL, PL, RO, RS, SK, UA, UK (England). UA: Ternopil Region.

Larvae parasitize terrestrial gastropods *Euomphalia strigella* (Povolný & Groschaft, 1959), *Helicella itala* (Rudzinski, 1995), *Xerolenta obvia* (Verves & Kuzmovich, 1979). Flies prefer chalk deposits (Emden, 1954; Rudzinski & Flügel, 2007), and feed on flowering *Daucus carota*, *Euphorbia esula*, *Peucedanum oreoselinum*, *Prunus padus*, *Seleranthus* sp., *Thymus serpyllum*, *Tilia cordata*, and on oak leaves on honeydew of *Tuberculoides annulatus* (Draber-Mońko, 1973).

24. *Discachaeta cucullans* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AT, BA, BG, CH, CZ (Bohemia and Moravia), DE, ES, FR (mainland), GR, HR, HU, IT (mainland and Sicily), RO, RS, SK, UA; Asia: AM, AZ, GE, IL, RU (Dagestan), TR. UA: Crimea, Kherson, Mykolaiv and Zaporizhzhya Regions.

Larvae are the parasitoids of terrestrial snails *Cernuella virgata* (Hopkins & Baker, 1993; Lehrer, 1966), *Euomphalia strigella*, *Helicella obvia* (Povolný & Verves, 1990), *Theba pisana* (Hopkins & Baker, 1993; Lehrer, 1966). Adults prefer chalk deposits (Emden, 1954), steppes and deserts (Trofimov, 1969), different limestone and dolomite-lemestone thermophilic associations from the sea coast to more than 1600 m a. s. l. (Povolný, 1999).

Material examined: Crimea: Bakhchysaray District: Beregove village, sandy area, 3-10.08.2004, 9♂, 11♀; Lenino District: Qazan Tip State Reserve, 10-13.05.2005, 19-27.07.2007, 15♂, 4♀ (L. Khrokalo, Yu. Verves). Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, sandy and dry steppe areas, 8.07.1998, 1♂. Zaporizhzhya Region: Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 12.06.2008, 1♂ (Yu. Verves).

25. *Discachaeta pumila* (Meigen, 1826)

Distribution: Palaearctic: Europe: AT, BE, BG, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland), HR, HU, IT (mainland), LV, LT, NL, NO, PL, RO, RU (Kalinigrad, Moscow and Leningrad Regions), SE, SK, UA, UK (England). Asia: IL. UA: Ivano-Frankivsk, Khmelnytsky, Kyiv and Ternopil Regions.

Larvae are endoparasites of terrestrial crop-damaging snail *Theba pisana* (Harpaz & Oseri, 1961; Moran, 1987) and reared in the laboratory on freshly killed flies. Imagoes prefer lower, damper areas with very few caught on the limestone ridge (Richet et al., 2011); associated with chalk deposits and wastelands (Emden, 1954; Kejval, 1998) at altitudes up to 1650 m a. s. l.; feed on flowers of *Heracleum* sp. (Menzel & Ziegler, 2002), *Achillea millefolium* (Draber-Mońko, 1973), and *Daucus* sp. (Richet et al., 2011).

Material examined: Ivano-Frankivsk Region: Kosiv District: Rozhniv village, humid meadow, 8-11.08.1975, 4♂; Kyiv City: Holosiiv District: Baykove Cementery, 13.07.-24.09.2003, 6♂; Holosiiv Park in memory M. Rylsky, 10.06.2009, 1♂; "Sovky hole", coast of pond, humid meadow, 16.07.2003, 5♂, 2♀ (Yu. Verves); Uralska street, 6.07.2009, 1♂ (A. Drozdovska); Vasylkivska street 33, yard, 5.07.2008, 21.06.2010, 27.05., 29.06. and 7.07.2010, 8♂, 2♀; Vasylkivska street 98, yard, 19.07. and 8.08.2002, 2♂, 1♀ (a pair collected *in copula*); Williams street, dry meadows, 19.08.2002, 1♂; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000, 15.07.2005, 2♂ (Yu. Verves).

26. *Heteronychia (Boettcherella) mutila* (Villeneuve, 1912)

Distribution: Palaearctic: Europe: BG, GR, HR, HU, RO, RS, SK, UA. Asia: AM, CY, GE, RU (Krasnodar Region), TR. UA: Crimea, Kherson, Mykolaiv, Odesa and Zaporizhzhya Regions.

Larvae are the parasitoids of terrestrial *Helicidae* (Coupland & Baker, 2004). The species accompanies rather undisturbed xerothermophilous habitats, especially on limestone with forest-steppe or open steppe vegetation (Povolný & Verves, 1997).

Material examined: Crimea: Bakhchisaray District: Beregove village, sandy area, 4-5.08.2004, 2 ♂; Lenino District: Qazan Tip State Reserve, 10-13.05.2005, 1 ♂ (L. Khrokalo, Yu. Verves). Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, sandy and dry steppe areas, 7-8., 14.-16. and 24.07.1998, 79 ♂, 1 ♀. Zaporizhzhya Region: Berdyansk City, sandy spit at Azov Sea, 14-17.08.1994, 48 ♂, 11 ♀; Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, meadows and bushes, 23.08.1997, 4. and 13.06.2008, 4 ♂; Kyrylivka village, Fedotova kosa, sandy area nr sea coast, 16.08.1997, 38 ♂, 14 ♀ (Yu. Verves).

27. *Heteronychia (Ctenodasypygia) siciliensis* (Böttcher, 1913)

Distribution: Palaearctic: Europe: BG, ES, GR, HU, IT (mainland and Sicily), RO, UA; North Africa: EG, ES (Canary Is.); Asia: CY, IL, PA, SY, TR. UA: Crimea and Odesa* Regions.

Larvae are parasitoids of terrestrial snails. Flies prefer hot and very dry habitats (e. g. stony riverbeds in *Juglano-Platanetum orientalis*); adults usually sit in shady places under trees and shrubs (Povolný, 1992, 1998).

Material examined: Crimea: Bakhchisaray District: Beregove village, sandy area and sea shore, 11.08.1996, 15-25.08.2001 and 4-9.08.2004, 21 ♂, 2 ♀; Lenino District: Qazan Tip State Reserve, 17-29.07.2007, 23 ♂, 59 ♀ (Yu. Verves). Odesa City: Hydrobiological station of University, 26.08.2009, 1 ♂, 1 ♀ (Yu. Protzenko).

28. *Heteronychia (s. str.) belanovskyi* Verves, 1973

Distribution: Palaearctic: Europe: BG, CZ (Moravia), GR, HU, RO, RS, RU (Voronezh Region), SK, UA; Asia: AZ, GE, RU (North Caucasus). UA: Crimea, Dnipropetivsk, Kherson, Kyiv, Mykolaiv, Odesa and Zaporizhzhya Regions.

This is a thermophilic and obviously heliophilic species accompanying forest-steppe and steppe habitats. In mountains it occurs in habitats with thin vegetation of shrubs, preferring dry soils - limestone habitats, loess (Povolný & Verves, 1997).

Material examined: Crimea: Bakhchisaray District: Beregove village, sea shores, 25.08.2001, 1 ♂; sandy area, 6-9.08.2004, 3 ♂ (Yu. Verves); Lenino District: Qazan Tip State Reserve, 10-13.05.2005, 5 ♂, 5 ♀ (L. Khrokalo, A. Kotenko). Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, feather grass steppe, 6. and 10.08.2000, 7 ♂. Kherson Region: Chapline District: Askania-Nova Biosphere Reserve, park, 22-28.07.2008, 62 ♂; Gola Prystan District: Black Sea Biosphere Reserve, Ivano-Rybalchansky branch, 10.08.1974, 4 ♂. Kyiv City: Shevchenko District: O. Fomin Botany Garden, 25.05.2002, 1 ♂ (Yu. Verves). Mykolaiv Region: Berezanka District, coast of Tiligul lyman, 15-20.06.1988, 3 ♀ (S. Zrazhevsky). Odesa Region: Ismail District: Ismail City, 8.08.2009, 1 ♂; Suvorove village, 21.05., 12.08.2003 and 21.08.2009, 3 ♂ (V. Corobchysyn, Yu. Protzenko); Ivanivka District: Severynivka village, forest, 25.07.1985, 1 ♂; Zaporizhzhya Region: Berdyansk City, park, 2.-26.05.1966 and 5.07.1974, 5 ♂, 2 ♀ (N. Gulinov); Melitopol City, 6. & 26.06.1981, 5.06.1983, 5 ♂ (S. Dzhafarov, I. Vlasov).

29. *Heteronychia (s. str.) bulgarica* (Enderlein, 1936)

Distribution: Europe: AT, BG, BY, DE, CH, CZ (Bohemia and Moravia), DK, EE, ES, FR (mainland and Corsica), HR, HU, IT (mainland, Sardinia and Sicily), MD, MT, NO, PL, PT, RO, RU (Bashkortostan, Leningrad and Perm Regions), SE, SK, UA; Asia: AM, AZ, GE, RU (Kabard-Balkaria and Karachay-Cherkessia), TR. UA: Cherkasy, Donetsk, Kharkiv, Kyiv, Luhansk, Poltava, Volyn and Zhytomyr Regions.

This species bred from a live terrestrial snail. Flies accompany warm and thin lowground forests and river valleys including the lower vegetation tiers (Povolný & Verves, 1990, 1997); feed on flowers of *Anethum graveolens* (Verves, 2003).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 30 km N of Kaniv, 20.06.1983, 9.07.1988, 6 ♂ (Yu. Verves, S. Zrazhevsky). Kyiv City: Holosiiv District: Baykove Cementery, 7.08. and 24.09.2003, 3 ♂; "Didorovsky" pond, humid banks, 28.08.1999, 1 ♂; Vasylkivska street 33, yard, 25.06.2008 and 18.-28.07.2009, 5 ♂, 1 ♀; Vasylkivska street 98, yard, 22.07.2002, 2 ♂; Williams street, dry meadows, 19.08.2002, 1 ♂ (Yu. Verves); Podil District: Vyshgorod street, Station of Young Naturalists, park, 19, 21. and 31.07.1959, 4 ♂ (O. Rogocha). Kyiv Region: Kyiv-Sviatoshyn District: Moshchun village, humid meadows near forest stream, 8.09.2003, 2 ♂; Obukhiv District: Velyki Dmytryovychi village, dry meadows, 29.06.2001, 1 ♂ (Yu. Verves). Poltava Region: Pyryatyn District: Lelyaky village, bank of Uday river, 28.05.2013, 1 ♂ (Yu. Protzenko)

30. *Heteronychia (s. str.) chaetoneura* Brauer and Bergenstamm, 1889*

Distribution: Palaearctic: Europe: AT, DE, FR (mainland), UA: Chernigiv, Kherson, Kyiv City and Kyiv Regions. Firstly recorded for Ukrainian fauna.

Material examined: Chernigiv Region: Borzna District: environs of Yaduty village, Biological Station of Nizhyn University, 51°, 24,3' N, 32°, 22,6' E, bag, 11.06.-11.07.2000, 9 ♂. Kherson Region: Gola Prystan City, bog, 30.08.1974, 6 ♂. Kyiv Region: Brovary District, Rozhny village, bog, 15.08.1999, 2 ♂ (Yu. Verves).

31. *Heteronychia (s. str.) consanguinea* (Rondani, 1860)

Distribution: Palaearctic: Europe: BG, FR (mainland and Corsica), GR, HR, IT (mainland, Sardinia and Sicily), RS, RU (Krasnodar and Stavropol Regions), UA; North Africa: DZ; Asia: IL, PA, SY, TR. Oriental: PK (North-West Frontier Province). UA: Chernivtsi and Crimea Regions.

Larvae are parasitoids of terrestrial snail *Theba pisana* (Coupland, 1994). In Sicily flies were collected at altitudes to 800 m o. s. l., in thermophilic associations on limestone with secondary macchia, but essentially being *Pictacio-Rhamnetalia alaterni*, *Pistacio lentisci-Quercetaea ilicis*, *Oleo-Quercetaea virgiliiana* and *Erico arboreae-Quercetaea ilicis*; from the branches of *Quercus ilex*; at the tips of dry stems of *Asphodelus ramosus* etc. (Povolný, 2003; Povolný & Znojil, 1999).

Material examined: Crimea: Lenino District: Qazan Tip State Reserve, 17-29.07.2007, at coastal sea stones, 10 ♂, 10 ♀ (Yu. Verves).

32. *Heteronychia (s. str.) depressifrons* (Zetterstedt, 1845)

Distribution: Palaearctic: AL, AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland), GR (Corfu I.), HR, HU, IT (mainland), MK, MT, NL, NO, PL, RO, RS, RU (Ivanovo, Moscow, Leningrad and Voronezh Regions), SE, SK, UA, UK; Asia: CN (Beijing, Jiangsu, Liaoning, Shanghai), JP (Kyushu), KN, OM, RU (Karachay-Cherkessia, Novosibirsk, Southern Primorye and Tomsk Regions). Oriental: CN (Guizhou), JP (Ryukyu Is.: Okinawa I.). UA: Cherkasy, Chernigiv, Chernivtsi, Dnipropetrovsk, Ivano-Frankivsk, Kirovograd, Kharkiv, Kyiv, Poltava, Volyn, Zakarpatty and Zhytomyr Regions.

This forest species prefers shady humid stands at lower forest elevations (Povolný & Verves, 1997); reared in the laboratory on freshly killed snails (Richet et al., 2011). Flies feed on flowers and aphid excreta (Verves & Khrokalo, 2006). In mountains adults were collected at altitude 1400 m a. s. l. in association *Adenostylo-Piceetum* on flowers of *Heracleum* (Menzel & Ziegler, 2002).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, side of hill "Maryina Gora", humid hornbeam forest, 3.06.2003, 1 ♂. Kyiv City: Holosiiv District: "Sovky hole", coast of pond, humid meadow, 31.07.2002, 1 ♂, 1 ♀. Kyiv Region: Bila Tserkva City, "Oleksandria" dendrological park, 3.05.2009, 1 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 29.05. and 4.06.2003, 6 ♂, 3 ♀; 5.07.2007, 1 ♂ (Yu. Verves). Poltava Region: Pyryatyn District: Kroty village, 8.07.2008, 1 ♀ (A. Drozdovska). Zakarpatty Region: Uzhgorod District: Nyzhne Solotvyno village, humid meadow nr stream, 98°33'N, 22°26'E, 160 m a. s. l., 21.08.2014, 1 ♀ (Yu. Verves).

33. *Heteronychia* (s. str.) *dissimilis* (Meigen, 1826)

Distribution: Palaearctic: AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, EE, ES, FR (mainland), HR, HU, IT (mainland), LT, LV, MD, MK, NL, PL, RO, RS, RU (Arkhangelsk, Kaliningrad, Leningrad, Moscow and Voronezh Regions), SK, UA, UK (England); Asia: CY, RU (Primorye, Sakhalin and Tyumen Regions). UA: Cherkasy, Chernigiv, Chernivtsi, Dnipropetrivsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Luhans'k, Mykolaiv, Poltava, Rivne, Sumy*, Ternopil, Volyn, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae are developed in terrestrial succineid snails (Verves, 1976) and helicid snails *Arianta arbustorum*, *Brachybaena fruticum*, *Monachoides incarnata* (Verves & Khrokalo, 2006); reared in the laboratory on freshly killed snails (Richet et al., 2011). Flies prefer bags, humid meadows, borders of hygrophylous forests and alp meadows. Adults feed on flowers and aphid excreta (Verves & Khrokalo, 2006).

Material examined: Cherkasy Region: Cherkasy District: Khreschatyk village, humid meadow, at *Vicia crassa*, 20.08.1946, 1 ♂; Sushky village, humid meadows, 16.07.1946, 1 ♂; Kaniv District: Polstvyn village, bog, 8.07.1947, 1 ♂ (O. Kryshtal); Kaniv State Nature Reserve, bogs and bushes nr Dnipro River, 22.05-20.09, 1966-1969, 1972-1991, 2003-2004, 2010, 185 ♂ 11 ♀, (Yu. Verves); Zmiini Is., bushes at coast of Dnipro, 23.06.1988, 1 ♂ (S. Zrazhewsky). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 51°24,3' N, 32°, 22,6' E, 11.06.-25.08.2000, 17 ♂, 6 ♀ (Yu. Verves). Kyiv City: Holosiiv District: "Sovky hole", coast of pond, humid meadow, 10.09.2000, 27.06. and 16.07.2003, 6 ♂, 2 ♀; Obolon district: unnamed island at Dnipro, N 50°30'25", E 30°31'16", 26.05.2011, 3 ♂; 10 km S of Kyiv City Centre, Olzhyn I. at Dnipro, 25.06.2009, 1 ♀; Podil District: Shevchenko Underground Station, humid meadow nr pond, 3-4.06.2000, 1 ♂; Shevchenko District: "Syretz" residential community, park, humid meadow nr pond, 3-4.06.2000, 3 ♂; Kyiv Region: Boryspil District: Rozhny village, bushes at Dnipro coast, 22.08.1999, 2 ♂, 1 ♀; Brovary District: Zazymya village, 5 km N, 1.08.2001, 50 ♂, 3 ♀; Obukhiv District: Velyki Dmytroychi village, asp forest nr bog, 4.07.1994, 4.07.1999, 9 ♂, 2 ♀ (Yu. Verves). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13 and 15.08.2010, 2 ♀; Ulyanivka village, meadows, 13.07.2009, 2 ♂ (Yu. Verves); Kremenchug District: Samusivka Village, bog, 21. and 25.06.1949, 3 ♂ (O. Kryshtal); Pyryatyn District: Grabarivka village, meadows near Ruda river, 15.07.2009, 3 ♂; Bilotserkivtsi village, locality "Murentzeve", 15.08.2010, 1 ♀; Keybalivka village, meadows at bank of Uday river, 11-17.07.2009, 4 ♀; Kharkivtsi village, 2 km S, "Velyki Solontzi" locality, 13-14.07.09, 1 ♀; Lelyaky village, meadows at bank of Uday river, 12. & 16.08.2010, 1 ♂ 2 ♀; Shkuratyi village, meadows, 17.07.2009, 1 ♀; Usivka village, meadows, 10 and 16.07.2009, 2 ♂ (A. Drozdovska, O. Tkachenko, Yu. Verves); Semeniv District: estuary of Sula River, humid meadows, 21.06.1949, 2 ♂ (O. Kryshtal); Sumy Region: Romny City, banks of Romenka River, meadows and bushes, 21-30.08.2009, 2 ♂, 2 ♀ (Yu. Verves); Sumy District: Vakolovschyna Village, dry meadow, 17.06.1992, 1 ♀ (V. Gorobchishyn); Mogrytsya Village, 7-9.08.2009, 1 ♂ (Yu. Protzenko); Zakarpattya Region: Mizhgirya District: Kolochava village, 3-12.08.1995, 4 ♂, 1 ♀ (Yu. Verves); Zhytomyr Region: Novograd-Volynskiy City, bank of River, 17.07.1979, 1 ♂ (V. Korneev).

34. *Heteronychia* (s. str.) *haemorrhoa* (Meigen, 1826)

Distribution: Palaearctic: Europe: AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland and Corsica), GR, HR, HU, IE, IT (mainland, Sardinia and Sicily), LV, MK, NO, PL, RO, RS, RU (Bashkortostan, Leningrad and Voronezh Regions), SE, SK, UA, UK (England); Asia: AZ, TR. UA: Cherkasy, Chernigiv, Chernivtsi, Crymea, Dnipropetrivsk, Ivano-Frankivsk, Kharkiv, Kherson, Kyiv, Mykolaiv, Odesa, Sumy* and Zakarpattya Regions.

Larvae bred from living snails *Cepaea hortensis* (Keilin, 1919; Mik, 1890; Schmitz, 1917), *C. nemoralis* (Enderlein, 1933) and *C. vindobonensis* (firstly recorded). Adults associated with limestone territories or lowland flood-plain forests (Girfanova, 1958; Gunárová & Slamečková, 1966; Kejval, 1998). Flying period is continued from May to October (Séguy, 1941); the flies feed on flowers of *Anethum graveolens*, *Heracleum sibiricum*, *Solidago canadensis* (Verves, 2003, 2013).

Material examined: Cherkasy Region: Uman City, "Sofiyka" dendrological park, 13-14.06.2006, 2 ♂, 2 ♀; Kaniv District: Buchak village, 6.07.1983, 2 ♂; Kaniv Nature Reserve, 23.06.

and 4.07.1983, 11 ♂; Keleberda village, 3 km E, humid forest near pond, 20.05.2002, 1 ♂; Ros River, mouth, humid meadow, 24.07.1979, 3 ♂; Trakhtemyriv Village, 9.-12.07.1983, 3 ♂, 3 ♀ (one pair in copula); 06.1983, 1 ♂, bred from living terrestrial snail *Cepaea vindobonensis*. Chernigiv Region: Ichnya district: "Trostyanetz" dendrological park, meadows and forest at lake coast, 4. and 11.08.1999, 4 ♂, 1 ♀; Kirovograd Region: Znyamyanka District: "Chorny Lis" forest, 25.07.1960, 1 ♂, at flowers of *Aegopodium podagraria* (L. Rogocha). Kyiv City: Dnipro District: Hydropark, bushes, 16.06.2010, 1 ♂, 5 ♀; Trukhaniv I., nr Babyne lake, 12.08.2007, 1 ♀; Holosiiv District: Baykove Cemetery, 13.07.-7.08.2003, 26 ♂, 9 ♀, 16.08.2004, 15 ♂, 1 ♀; "Didorovsky" pond, humid banks, 25.08.1999, 11.07-9.08.2002, 19 ♂, 2 ♀; Kozacha street, on leaves, 7.07.2005, 1 ♂; National Exhibition Centre, busches, 27.08.1999, 17 ♂; "Sovky hole", coast of pond, humid meadow, 30.07.-29.08.2002, 27.06.-16.07.2003, 27.08.2004, 88 ♂, 7 ♀; "Theophania" park, bushes, 11.06.2013, 4 ♂; Vasylkivska street 33, yard, 27.05.2010, 1 ♂; Vasylkivska street 98, yard, 5.05.-30.09.2002, 31 ♂, 12 ♀; Williams street, dry meadows, 25.04.-19.08.2002, 17 ♂, 1 ♀; Podil District: Hydropark, bushes, 16.06.2010, 1 ♂; Shevchenko Square, humid meadow nr pond, 3-4.06.2000, 1 ♂; "Syretz" residential community, park, humid meadow nr pond, 3-4.06.2000, 1 ♂; Trukhaniv I., nr Babyne lake, 12.08.2007, 1 ♀ (Yu. Verves); Vyshgorod street, Station of Young Naturalists, ravine, 28. & 31.07, 5. & 15.08.1959, 7 ♂, at flowers of *Heracleum* sp. (O. Rogocha); Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 12 ♂, 3 ♀; (Yu. Verves). Kyiv Region: Kyiv-Svyatoshyn District: Kruglyk village, bushes nr stream, 24.05. and 31.07.1972, 13 ♂; "Zhukiv Khutir" locality, humid forest, 14.07-14.08.1972, 15 ♂, 2 ♀; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 15.06.2004, 1 ♂; Obukhiv District: Tatzenky village, 3 km S, 14.09.2003, at leaves and ground at border of pine forest nr lake, 4 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 15.06.2004, 1 ♂; Tarascha District: Severynivka village, 25.07.1985, 1 ♂; Vyshgorod District: 20 km N of dam, left coast of Kyiv reservoir, sandy area and bushes, 5.8.2001, 3 ♂ (Yu. Verves). Odesa Region: Ismail District, Maly Taman I., 15. 07.2003, 1 ♂ (Yu. Protzenko); Odesa City, humid bushes near sea, 15.-26.08.1979, 3 ♂, 3 ♀. Poltava Region: Pyryatyn District: Shkuraty village, locality "Ostriv", sandy road, 15.08.2010, 1 ♂, 1 ♀ (Yu. Verves). Sumy Region: Romny City, banks of Romenka river, meadows and bushes, 21-27.08.2009, 2 ♂; dry meadows, at flowers of *Taraxacum officinale*, 5.05.2013, 1 ♂ (Yu. Verves).

35. *Heteronychia* (s. str.) *haemorrhoides* (Böttcher, 1913)

Distribution: Palaeartic: Europe: AT, BG, BY, CZ (Moravia), DE, EE, GR, HR, HU, IT (mainland), MD, MK, MT, PL, RU (Bashkortostan, Karelia, Leningrad, Perm and Voronezh Regions), UA; Asia: AZ, AM, GE, IL, IR, PA, RU (Alania, Altai, Dagestan, Karachay-Cherkesia, Krasnodar, Krasnoyarsk and Perm Regions), SY, TR. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae are parasitoids of various *Helicidae*: *Cantareus aspersus*, *Cepaea nemoralis*, *Eobania vermiculata*. Adult flies occup warm forest and shrubland habitats (Berner, 1973; Coupland & Baker, 2004; Povolný, 1992; Povolný & Verves, 1990). Flies were collected on stones at sea shore (Drensky, 1957); feed on flowers of *Pimpinella saxifraga* (Girfanova, 1958) and *Carum carvi* (Verves, 1979).

Material examined: Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 5-11.08.1999, 14 ♂, 1 ♀ (Yu. Verves). Crimea: Bakhchisaray District: Beregove village, sandy area, 6.08.2004, 1 ♂; Lenino District: Qazan Tip State Reserve, 24 and 29.07.2007, 2 ♂ (Yu. Verves); Theodosia Municipal Government: Karadagh Natural Reserve, 2-5.07.2006, 2 ♂ (A. Drozdovska). Kyiv City: Holosiiv District: Baykove Cemetery, 7.08.2003, 10 ♂; Dykiy island at Dnipro, sandy area, N 50°17'02", E 30°39'22" 6.10.2011, 1 ♀; Vasylkivska street 33, yard, 26.06.2009, 1 ♂. Kyiv Region: Kyiv-Svyatoshyn District: Irpin City, 2-4 km E, forest nr bog, 26.04.2003, 3 ♂ (Yu. Verves). Mykolaiv Region: Berezanka District: Tiligul lyman, coast, 4-20.07.1987, 15.06.1988, 1 ♂ (S. Zrazhewsky); Ochakiv District: Kinburn sandy area, 16.05.2003, 1 ♂ (Yu. Protzenko). Poltava Region: Pyryatyn District: Grabarivka village, meadows near Ruda river, 15.07.2009, 5 ♂, 6 ♀. Sumy Region: Romny City, banks of Romenka river, meadows and bushes, 21-

27.08.2009, 1 ♂. Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 123 ♂, 8 ♀ (Yu. Verves).

36. *Heteronychia (s. str.) lacrymans* (Villeneuve, 1912)

Distribution: Palaearctic: Europe: AT, BG, CZ (Bohemia and Moravia), HU, RO, SK, UA; Asia: GE, IL, IQ, RU (Krasnodar Region), TR. UA: Crimea, Dnipropetivsk, Kherson, Kyiv and Zaporizhzhya Regions.

This species is an indicator of native biotopes in Carpathian mountain forests (Povolný, 1985).

Material examined: Crimea: Alushta City: 15 km NE, environs of Rybache village, hollow "Kanakskaya Balka", meadows, 5-8.05.2005, 1 ♂, 2 ♀; Bakhchisaray District: Beregove village, sandy area, 6-8.08.2004, 9 ♂; Lenino District: Qazan Tip State Reserve, 17-28.07.2007, 2 ♂, 2 ♀ (L. Khrokalo, Yu. Verves).

37. *Heteronychia (s. str.) mazurmovitshi* Verves, 1977

Distribution: Palaearctic: Europe: UA: Cherkasy, Poltava* and Vinnytsia* Regions.

Material examined: Poltava Region: Grebinky District: environs of Kulazhyntzy village, meadows, 13 and 15.08.2010, 1 ♂; Pyryatyn District: Davydivka village, meadows, 15.07.2009, 2 ♂; Keybalivka village, meadows near Uday river, 11.07.2009, 2 ♂; Usivka village, meadows, 10 & 16.07.2009, 2 ♂ (A. Drozdovska, Yu. Verves). Vinnytsia Region: Chechelnyk District: "Karmelyuk's Podillya" National Nature Park, Dokhno village, 8.07.2013, (V. Gorobchysyn).

38. *Heteronychia (s. str.) pauciseteta* (Pandellé, 1896)

Distribution: Palaearctic: Europe: BA, BG, CH, CZ (Bohemia and Moravia), DE, EE, GR, HR, PL, RS, RU (Bashkortostan, Kaliningrad, Leningrad, Moscow and Perm Regions), SK, UA; Asia: RU (Altai, Irkutsk and Tuva Regions). UA: Kharkiv Region.

Forest species accompanying mesophytic formations (Povolný & Verves, 1997).

39. *Heteronychia (s. str.) proxima* (Rondani, 1860)

Distribution: Palaearctic: Europe: AD, AL, AT, BG, BY, CH, CZ (Bohemia and Moravia), DE, EE, ES, FI, HR, HU, IT (mainland and Sicily), LV, MD, PL, RO, RS, RU (Ivanovo, Leningrad, Lipetsk, Moscow, Voronezh and Yaroslavl Regions), SK, SE, UA; North Africa: LY (Bezzi, 1921¹¹); Asia: RU (Altai and Novosibirsk Regions), CN (Xinjiang). UA: Cherkasy, Chernigiv, Chernivtsi, Dnipropetivsk, Ivano-Frankivsk, Kharkiv, Kherson, Kirovograd, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Sumy*, Vinnytsia, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae are endoparasites of terrestrial snail *Eumphalia strigella* (Povolný & Groschaft, 1959) and caterpillar of geometrid moth, *Agriopsis aurantaria* (firstly recorded). Flies are common on meadows, forests borders (Gunárová & Slamečková, 1966; Verves, 1973), chalk grasslands and limestone hillsides (Rudzinski & Flügel, 2007). Adults feed at flowers of *Phalacroloma annuus*, *P. septentrionale*, *Solidago canadensis* (Verves, 2013).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, Krugly I., 20.07.1986, 1 ♀; yard, at vegetation, 19.08.1988, 1 ♂; 8.06.2003, 3 ♂; side of hill "Maryina Gora", humid hornbeam forest, 3.06.2003, 1 ♂ (S. Zrazhewsky, Yu. Verves); Trakhtemyriv village, 30 km N of Kaniv, 30.06. & 4.07.1988, 2 ♂ (S. Zrazhewsky). Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 5-11.08.1999, 59 ♂, 1 ♀. Kyiv City: Desna District: 5 ♂ "Lisova" subway-station, 5 km E, mixed forest and bushes near lake Lisove, 20.07.2004, 1 ♂; Dnipro District: "Hydropark", nr Berizka lake, 22.06.2006 & 16.06.2010, Holosiiv District: Baykove Cemetery, 13.07.-7.08.2003, 5 ♂; "Didorovsky" pond, humid banks, 25.08-4.09.1999, 11.07-9.08.2002, 9 ♂ 1 ♀; Holosiiv park in memory Maxym Rylsky, 10.06.2009, 1 ♂; Kozacha street, 7.07.2005, 1 ♂; "Sovky hole", coast of pond, humid meadow, 30.07. and 29.08.2002, 2 ♂, 1 ♀; "Theophania" park, 11.06.-29.07.2013, 38 ♂, 2 ♀; "Pyrogiv" field museum,

¹¹ This data is absent in modern catalogues (Pape 2006; Verves, 1986).

24.08.1999, 28.05.2000, 19 ♂; Vasylkivska street 33, yard, at leaves and walls, 25.06.-8.08.2008, 18.05.-31.07.2009, 31.05. & 7.07.2010, 61 ♂, 3 ♀; Vasylkivska street 98, yard, 5.05.-10.08.2002, 40 ♂, 5 ♀; indoor of laboratory building, on windows, 5.09.2002, 1 ♀; Williams street, dry meadows, 12-19.08.2002, 1 ♂, 1 ♀; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 5 ♂, 1 ♀; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000, 15.07.2005, 4 ♂, 1 ♀; Kyiv Region: Bila Tzerkva City: "Oleksandriya" park, 3.05.2009, 2 ♂; Kyiv-Svyatoslavsk District: Irpin City, 2-4 km E, forest nr bog, 26.04.2003, 1 ♂ (Yu. Verves); Novosilky village, maple forest, host (larva of geometrid moth, *Agriopis aurantaria*) collected in April 1987, 1 ♂, bred 28-29.05.1987 (V. Rafalskiy); Obukhiv District: Velyki Dmytroychi village, asp forest nr bog, 4.07.1994, 27.06.1997, 4.07.1999, 20 ♂ (Yu. Verves). Sumy Region: Romny City: banks of Romenka river, meadows and bushes, 21-27.08.2009, 1 ♂. Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140 m a. s. l., 16 & 19.08.2014, 3 ♂, 1 ♀ (Yu. Verves).

40. *Heteronychia (s. str.) rohdendorfi* (Povolný & Slamečková, 1959)

Distribution: Palaearctic: Europe: AT, CZ (Moravia), CH, DE, FR (mainland), GR, HU, IT (mainland and Sicily), PL, RO, SK, UA: Chernivtsi, Ivano-Frankivsk, Kyiv City and Zakarpattya Regions.

Flies are distributed in undisturbed limestone habitats from lower elevations up to the mountainous habitats especially in the Carpathians and the Alps (Povolný, 1999).

41. *Heteronychia (s. str.) rohdendorfiana* (Mihályi, 1975)

Distribution: Palaearctic: Europe: AT, BG, CH, CZ (Moravia), DE (Bavaria), HU, PL, SK, UA: Chernivtsi, Ivano-Frankivsk and Zakarpattya Regions.

Larvae are the endoparasites of terrestrial snails *Arianta arbustorum*, *Brachybaena fruticum* and *Monachoides incarnata*. The large specimens live in mountains, small - in foothill humid forests (Povolný, 1982).

Material examined: Zakarpattya Region: Mizhgirrya District: Kolochava village, 2-4 km S, along Kvazovetz stream, 600-1000 m o. s. l., 12-14.08.1995, 2 ♂; 6 km W, board of Tereblya pond, 500 m o. s. l., 12. and 17.08.1995, 3 ♂ (Yu. Verves).

42. *Heteronychia (s. str.) schineri* (Bezzi, 1891)

Distribution: Palaearctic: Europe: AD, AT, BG, CH, CZ (Bohemia and Moravia), DE, FR (mainland), HR, HU, IT (mainland and Sicily), MK, PL, RO, RS, SK, UA; Asia: AZ, GE, TR. UA: Chernivtsi, Ivano-Frankivsk, Odesa*, Ternopil* and Zakarpattya Regions.

This species are reared in the laboratory on freshly killed snails (Richet et al., 2011). Adult flies associated with limestone territories or lowland flood-plain forests (common in mountain forests (Gudjabadze, 1970; Gunárová & Slamečková, 1966; Kejval, 1998; Richet et al., 2011); feed at flowers of *Sedum acre* (Draber-Moňko, 1973).

Material examined: Odesa Region: Ismail District: Maly Taman I., 15.07.2003, 2 ♂ (Yu. Protzenko). Ternopil Region: Zalishchyky City: coast of Dnister river, 20.05.1986, 1 ♀ (S. Zhrazhevsky).

43. *Heteronychia (s. str.) slovaca* Povolný and Slamečková, 1967

Distribution: Palaearctic: Europe: CZ (Bohemia and Moravia), FR (mainland), SK, UA: Ivano-Frankivsk and Kyiv Regions).

Flies were collected on the borders of mountain forests in Carpathians (Povolný, 1985; Verves, 1977).

44. *Heteronychia (s. str.) vagans* (Meigen, 1826)

Distribution: Palaearctic: Europe: AD, AT, BG, BE, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland), HR, HU, IE, IT (mainland, Sardinia and Sicily), LV, MD, NL, NO, PL, PT, RO, RS, RU (Arkhangelsk, Bashkortostan, Ivanovo, Kaliningrad, Karelia, Leningrad,

Moscow, Ryazan and Voronezh regions), SE, SK, UA, UK; Asia: CN (Heilongjiang), GE, JP (Hokkaido), RU (Amur, Khabarovsk, Kurily Is., Primorye and Sakhalin Regions), TR. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae are endoparasites of helicid *Eulota maacki* (Artamonov, 1985) and succineid (Verves, 1976) snails. This species reared in the laboratory on freshly killed snails and bred from a dead helicid snail *Cepaea nemoralis* in nature (Richet et al., 2011). Flies most abundant near deciduous woodlands, poor pasture, thin forests and bushy habitats and are mostly common at lower elevations (Povolný & Verves, 1990, 1997; Richet et al., 2011); feed at flowers of *Anethum graveolens*, *Heracleum sibiricum*, *H. sphondylium*, *Phalacroloma septentrionale*, *Solidago canadensis* (Verves, 1975, 2003, 2013) and attracted to piglet carcasses (Prado e Castro et al., 2010).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 30 km N of Kaniv, 3-13.07.1988, 4 ♂ (S. Zrazhewsky). Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 13.08.1999, 2 ♂. Kyiv City: Dnipro District: Hydropark, nr Berizka lake, 22.06.2006, 1 ♂; Holosiiv District: ponds "Sovky hole", 9.06.2011, 1 ♂; "Didorovsky" pond, humid banks, 25.08-4.09.1999, 11.07-9.08.2002, 12.09.2005, 19 ♂, 3 ♀; Kozacha street, on leaves and walls, 7.07.2005, 1 ♂; Kozachy I. at Dnipro, 11.08. & 9.09.2009, 1 ♂, 1 ♀. "Prospect Nauki" avenue, "Lysa Gora", hills, 19.08.2004, 1 ♂; "Pyrogiv" field museum, 24.08.1999, 28.05.2000, 10 ♂; National Exhibition Centre, busches, 27.08.1999, 7 ♂; Vasylkivska street 33, yard, 27.07.2009, 1 ♂; Vasylkivska street 98, yard, 9.05-10.07.2002, 4 ♂; Williams street, dry meadows, 25.04.-19.08.2002, 9 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 2 ♂; (L. Khrokalo, Yu. Verves). Kyiv Region: Bila Tzerkva City: "Oleksandriya" park, 3.05.2009, 1 ♂; Kyiv-Svyatoshyn District: Irpin City, 2-4 km E, forest nr bog, 26.04.2003, 1 ♂; Moshchun village, humid meadows near forest stream, 8.09.2003, 1 ♂; Obukhiv District, Tatzenky village, 3 km S, 14.09.2003, 1 ♂ (Yu. Verves). Mykolaiv Region: Ochakiv District: Kinburn sandy area, 16.05.2003, 3 ♂, 2 ♀ (Yu. Protzenko). Poltava Region: Pyryatyn District: Deymanivka village, locality "Kuty", meadows, 8.07.2009, 1 ♂; Grabarivka village, meadows near Ruda river, 15.07.2009, 11 ♂, 3 ♀; Shkuraty village, meadows, 17.07.2009, 1 ♂ (A. Drozdovska, Yu. Verves). Sumy Region: Romny City: banks of Romenka river, meadows and bushes, 21-27.08.2009, 5 ♂, 1 ♀ (Yu. Verves).

45. *Heteronychia (s. str.) vicina* (Macquart, 1835)

Distribution: Palaearctic: Europe: AT, BG, CH, CZ (Moravia), DE, ES, FI, FR (mainland and Corsica), GR, HU, IE, IT, NO, PL, RS, SK, SE, UA, UK; Asia: GE, RU (Kabardi-Balkaria). UA: Chernivtsi and Volyn Regions.

This species was never recovered from invertebrate and vertebrate corpses (Blackith et al., 1994) and reared in the laboratory on freshly killed snails (Richet et al., 2011). Adult flies were observed in Alps at altitudes 1650-2300 m o. s. l. in associations *Caricion curvulae* and *Larici-Piceetum* (Menzel & Ziegler, 2002).

46. *Heteronychia (Pandelleola) boettcheri* (Villeneuve, 1912)

Distribution: Palaearctic: Europe: AT, GR, HR, HU, RO, RS, UA; Asia: AZ, CY, IL, IR, PA, SY, TR. UA: Crimea and Odesa* Regions.

Larvae are parasites of terrestrial snail *Theba pisana* (Lehrer, 2006). The adult flies were collected in mountains at altitudes up to 1200 m a. s. l. (Povolný, 1996); prefer steppe and hemideserts (Trofimov, 1969).

Material examined: Crimea: Bakhchysaray District: Beregove village, sandy area, 1-11.08.2004, 37 ♂, 40 ♀; Lenino District: Qazan Tip State Reserve, 10-13.05.2005, 2 ♂, 4 ♀ (L. Khrokalo, Yu. Verves). Odesa Region: Ismail District, Suvorove village, 23.08.2009, 1 ♂; Odesa City: Hydrobiological Station of University, 26.08.2009, 1 ♂ (V. Corobchyshev, Yu. Protzenko).

47. *Heteronychia (Pandelleola) filia* (Rondani, 1860)

Distribution: Palaearctic: Europe: AT, BE, BG, CH, CZ, ES HR, FR (mainland and Corsica), GR, HU, IT (mainland and Sardinia), MK, MT, NL, PL, RO, RS, RU (Voronezh Region), SK, (mainland and Baleares Is.), UA, UK (England); North Africa: MA; Asia: IL, PA, TR. UA: Crimea, Donetsk, Kherson, Luhansk, Mykolaiv, Odesa and Zaporizhia Regions.

Larvae attack supposedly healthy snails *Helix* sp. (Rostand, 1920); are known as endoparasites of *Cernuella virgata* and *Theba pisana* (Coupland, 1994); reared in the laboratory on freshly killed snails (Richet et al., 2011) and bred from dead snails in nature (Povolný & Verves, 1990). This species shoves dependency to dry habitats, especially forest steppes, preferring limestone, less formations (Povolný & Verves, 1997) and meadows with chalk soils (Emden, 1954). The adult flies feed on flowers of *Achillea millefolium*, *Euphorbia cyparissias*, *Pastinaca sativa*, *Thymus serpyllum* (Draber-Moňko, 1973).

Material examined: Crimea: Alushta City: 15 km NE, Rybache village, "Kanakskaya Balka" hollow, meadows, 5-8.05.2005, 1 ♂, 1 ♀ (L. Khrokalo); Theodosia Municipal Government: Karadagh Natural Reserve, 5.07.2006, 1 ♂ (A. Drozdovska). Mykolaiv Region: Ochakiv District: Parutino village, debris of antic city Olvia, 16.07.2006, 1 ♂ (Yu. Verves). Odesa Region: Ismail District: Kyslytza village, 15 km SE, 2.08.2009, 2 ♂, 1 ♀; 5 km SE, 9.08.2009, 1 ♂; Maly Taman I., 15.07.2003, 1 ♂ (V. Gorobchishyn, Yu. Protzenko). Zaporizhia Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 4 ♂; Artemivsk District: Kyrylivka village, Fedotova kosa, sandy area nr sea coast, 16.08.1997, 6 ♂, 2 ♀; Berdyansk City: sandy spit at Azov Sea, 14-17.08.1994, 6 ♂, 2 ♀ (Yu. Verves).

48. *Heteronychia (Pandelleola) filiola* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: UA: Crimea.

Flies were collected in mountains alp steppe ("yayla") on stones (Verves, 1978).

Material examined: Crimea: Lenino District: Qazan Tip State Reserve, at sea board on stones, 10.05.2005, 2 ♂ (L. Khrokalo).

49. *Karovia hirticrus* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AD, AL, AT, BG, CH, CZ, DE, ES (mainland and Baleares Is.), FR (mainland and Corsica), HR, HU, IT (mainland and Sicily), MT, PL, PT, RO, RS, SE, SK, UA, UK (England); North Africa: DZ; Asia: AZ, GE, IL, RU (Krasnodar Region). UA: Cherkasy, Chernivtsi, Crimea, Ivano-Frankivsk, Kherson, Kyiv, Zakarpattya and Zaporizhia Regions.

Larvae in nature are bred from a swallows' corpses and numerous dead terrestrial snails *Cepaea nemoralis* (Beaver, 1972, 1973, 1977), living snails *Cantareus aspersus* (Barfoot, 1969), *Cernuella virgata* (Coupland, 1994) and *Theba pisana* (Coupland & Baker, 2004; Richet, 1990); reared in the laboratory from pig liver (Pérez-Moreno et al., 2006). Flies are strongly heliophilic accompanying habitats and hill tops, especially at lower elevations, with decreasing densities towards mountain ranges (Povolný & Verves, 1997) at altitudes up to 1600 m o. s. l. (Povolný, 1999). Adults common in synanthropic stations (Trofimov, 1969); were collected by trap baited a fleshly killed piglet (Prado e Castro et al., 2011) and related to corpses (Castillo Mirables, 2002; Romero et al., 2003).

Material examined: Crimea: Bakhchysaray District: Beregove village, loam sea shores, 14-16.08.1996, 1 ♂; Lenino District: Qazan Tip State Reserve, 17-29.07.2007, 11 ♂, 4 ♀. Kherson Region: Chapline District: Askania-Nova Biosphere Reserve, park, 22-28.07.2008, 14 ♂. Zaporizhia Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 4 ♂. Berdyansk City: sandy spit at Azov Sea, 14-17.08.1994, 4 ♂ (Yu. Verves).

Subtribe Phallanthina**50. *Asceloctella (Mimarhopocnemis) granulata* Kramer, 1908**

Distribution: Palaearctic: Europe: AT, BG, CZ (Moravia), DE, ES, FI, FR (mainland), HR, HU, IT (mainland), PL, RO, RS, RU (Leningrad and Voronezh Regions), SK, UA: Cherkasy, Chernigiv, Chernivtsi, Dnipropetivsk, Kyiv, Poltava* and Zhytomyr Regions.

Flies were feed on excreta of aphids *Rhophalosiphum padi* at leaves of *Prunus padus* (Draber-Mońko, 1973). This species accompanies especially undisturbed humid and warm lowland forests along rivers (Povolný & Verves, 1997).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, Krugly I., 1.07.1986, 1 ♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 7.07.-19.08.2000, 28 ♂. Kyiv City: Desna District: "Lisova" subway-station, 5 km E, mixed forest and bushes near lake Lisove, 20.07.2004, 2 ♂; Holosiiv District: "Didorovsky" pond, humid banks, 4.09.1999 & 9.08.2002, 3 ♂; "Sovky hole", coast of pond, humid meadow, 31.07.2002, 1 ♂. Kyiv Region: Boryspil District: Rozhny village, bog at coast of Dnipro, 16-21.08.1999, 11 ♂ (Yu. Verves). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13 and 15.08.2010, 1 ♂; Pyryatyn District: Kharkivtzy village, 2 km S, locality "Velyki Solontzi", 13-14.07.2009, 3 ♂; Lelyaky village, meadows at bank of Uday river, 12. & 16.08.2010, 3 ♂ (O. Tkachenko, Yu. Verves).

51. *Bellieriomima subulata* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland), HR, HU, IT (mainland), NL, NO, PL, RO, RS, RU (Bashkortostan, Karelia, Leningrad and Voronezh Regions), SE, SK, UA, UK (England); Asia: AZ, GE, KZ, RU (Altai, Amur and Tuva Regions). UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Ivano-Frankivsk, Kirovograd, Kyiv, Poltava, Sumy*, Volyn, Zakarpattya and Zhytomyr Regions.

Larvae are bred from pupae *Porthetria dispar* (Girfanova, 1957) and terrestrial snails (Povolný & Verves, 1990); reared in the laboratory on chopped grasshoppers (Richet et al., 2011). Adult flies associated with limestone territories or lowland flood-plain mesophytic and humid forests, parks and gardens; feed on flowers of *Solidago canadensis* (Verves, 2013), aphids' excreta, dead invertebrate and small vertebrate animals (Kejval, 1998; Povolný & Verves, 1997).

Material examined: Chernigiv Region: Borzna District: Makoshyno village, right coast of Desna, meadows, 20.08.2000, 1 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 8.08.1999, 1 ♂. Kyiv City: Dnipro District: Hydropark, bushes, 16.06.2010, 4 ♂; Holosiiv District: "Didorovsky" pond, banks, 9.08.2002, 1 ♂; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 1 ♂; National Exhibition Centre, bushes, 27.08.1999, 1 ♂; "Theophania" park, 11.06.2013, 1 ♂; Vasylkivska street 33, yard, 23.06.2009, 1 ♂; Vasylkivska street 98, yard, 28.05.2002, 1 ♂. Poltava Region: Pyryatyn District: Grabarivka village, meadows near Ruda river, 15.07.2009, 1 ♂. Sumy Region: Romny City: banks of Romenka river, meadows and bushes, 21-27.08.2009, 1 ♂ (Yu. Verves).

52. *Krameromyia anaces* (Walker, 1849)

Distribution: Palaearctic: Europe: AT, BG, CH, CZ (Bohemia and Moravia), DE, DK, ES, FR (mainland), HR, HU, IT (mainland and Sicily), PL, PT, RS, SK, UA, UK (England); North Africa: DZ; Asia: TR. UA: Chernivtsi, Odesa and Zakarpattya Regions.

Larvae are parasitoids of different terrestrial snails: *Cernuella explanata*, *C. virgata*, *Cochlicella acuta*, *Theba pisana* (Böttcher, 1912; Coupland, 1994; Coupland & Baker, 2004; Hopkins & Baker, 1993; Povolný & Verves, 1990) and reared on dead snail *Cepaea nemoralis* (Richet, 1990). The species frequents open sunlit, dry and warm habitats on sand, loess and generally poor soils, avoiding higher elevations and dense vegetation of shrubs and trees (Povolný & Verves, 1997), chalk grasslands and limestone hillsides (Rudzinski & Flügel, 2007). Flies feed on flowers of *Cerastium semidecandrum*, *Euphorbia cyparissias*, *Thymus serpyllum* (Draber-Mońko, 1973) and attracted to corpses (Castillo Mirables, 2002).

53. *Myorhina (Mehria) nemoralis* (Kramer, 1908)

Distribution: Palaearctic: Europe: AT, BG, BY, CH, CZ (Moravia), DE, FI, FR, HR, HU, NL, NO, PL, RO, RS, SE, SK, UA; Asia: CN (Neimenggu), KZ, RU (Karachay-Cherkessia, Krasnoyarsk and Magadan Regions). UA: Cherkasy, Chernigiv*, Chernivtsi, Ivano-Frankivsk, Kyiv, Poltava, Zakarpattya and Zhytomyr Regions.

The species accompanies dry deciduous, especially beech forests in central Europe, but it occurs also on the hill-tops of the Carpathians up to 2100 m a. s. l. (Povolný & Verves, 1990).

Material examined: Chernigiv Region: Borzna district: Yaduty village, Biological Station of Nizhyn University, coast of lake, bushes, 19.08.2000, 1 ♂ (Yu. Verves).

54. *Myorhina (s. str.) lunigera* (Böttcher, 1914)

Distribution: Palaearctic: Europe: AT, BA, CH, CZ (Moravia), DE, FR (mainland), IT (mainland), PL, RO, RS, SK, UA; Asia: AM, GE, RU (Karachay-Cherkessia, Krasnodar and Stavropol Regions). UA: Chernivtsi and Zakarpattya Regions.

This montane species accompanies beech forests, bogs and meadows, preferring limestone habitats at elevations of 490-1750 m a. s. l. (Povolný & Šustek, 1983; Povolný & Verves, 1997; Slamečková, 1961).

Material examined: Zakarpattya Region: Mizhgirrya District, Kolochava village, 5 km W, 1000-1400 m a. s. l., alp steppe, 14.08.1995, 1 ♂ (Yu. Verves).

55. *Myorhina (s. str.) nigriventris* (Meigen, 1826)

Distribution: Palaearctic: Europe: AD, AL, AT, BE, BG, CH, CZ (Bohemia and Moravia), DE, DK, ES, FR (mainland and Corsica), GR, HR, HU, IE, IT (mainland, Sardinia and Sicily), MT, NL, PL, PT, RO, RS, SE, SK, UA, UK; North Africa: DZ, LY, MA, TN; Asia: AM, AZ, CY, GE, RU (Chechnya, Dagestan, Karachay-Cherkessia, Krasnodar, Primorye and Stavropol Regions), TR. UA: Cherkasy, Chernivtsi, Crimea, Dnipropetrovsk, Ivano-Frankivsk, Kherson, Kyiv, Mykolaiv, Odesa, Zakarpattya and Zaporizhzhya Regions.

Larvae are bred in mummified small vertebrates: mice, birds etc. (Blackith & Blackith, 1990; Blackith et al., 1994), living and dead snails *Brephulopsis cylindrica* (Povolný & Verves, 1997), *Candidula intersecta* (Coupland & Baker, 2004), *Cantareus aspersus* (Barfoot, 1969), *Cepaea nemoralis* (Beaver, 1969, 1972; Richet, 1990; Richet et al., 2011), *Cernuella virgata* (Keilin, 1919), *Eobania vermiculata* (Coupland & Baker, 2004), *Helicella itala* (Bowell, 1917), *Helicopsis retowskii* (Verves & Khrokalo, 2006), *Helix pomatia* (Cameron & Disney, 1975), *Monacha cantiana* (Böttcher, 1913; Cameron & Disney, 1975; Séguy, 1941), *Oxychilus harellus* (Verves & Khrokalo, 2006), *Theba pisana*, *Xerolenta obvia* (Coupland & Baker, 2004), *Xeropicta krynickii* (Verves & Khrokalo, 2006). Maggots are known as parasites of egg-sucks and adult locusts *Schistocerca gregaria* (Séguy, 1932, 1953); larvae of carabid beetle *Carabus coriaceus*, adult beetles *Blaps macroura* (Emden, 1950), *Necrophorus humator* (Gimingham, 1922), *Procrustes coriaceus* (Séguy, 1941); *Apis mellifera* larvae (Guilhon, 1945, 1950) and adults (Séguy, 1965); larvae of *Bombus terrestris* (Smith, 1957). This species reared in the laboratory on freshly killed snails and different insects (Richet et al., 2011). Flies feed at flowers of *Achillea*, *Bellis*, *Erigeron*, *Euphorbia*, *Medicago*, *Pyrethrum*, *Rhamnus*, *Thymus*, excreta of aphids, destroyed organic matters (Draber-Mońko, 1973; Jędrzejewska-Szmek & Zych, 2013; Povolný & Verves, 1997; Verves & Khrokalo, 2006), attracted to fleshly killed piglet (Prado e Castro et al., 2010). Females bear 2nd stage larvae, which feed in their uterus by the excreta of special glands (Guilhon, 1945). This species is very adaptive: it occurs especially in dry sunlit habitats of both natural and secondary character, population densities distinctly decreasing in north of the distributional area and at high elevations (Povolný & Verves, 1997); associated with limestone hillsides, chalk grasslands, lowland flood-plain forests, vineyards (Kejval, 1998; Richet et al., 2011; Rudzinski & Flügel, 2007) up to 2100 m o. s. l. (Ziegler & Lange, 2001).

Material examined: Crimea: Bakhchysaray District: Beregove village, sandy area, 4-11.08.2004, 7 ♂; Lenino District: Qazan Tip State Reserve, 10-13.05.2005 & 23-29.07.2007, 20 ♂, 22 ♀ (L. Khrokalo, Yu. Verves). Kherson Region: Genichesk District: Chernigivka village, coast of

Sivash lagoon, sandy and dry steppe areas, 7-26.07.1998, 20-26.07.1998, 7♂; Gola Prystan District: Chornomorsky State Reserve, Ivano-Rybalchansky branch, 22.07.2006, 1♂. Kyiv City: Holosiiv District: Baykove Cementery, 7.08.2003, 2♂; "Didorovsky" pond, humid banks, 11.07.2002, 1♂; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 1♂; Vasylkivska street 98, yard, 8.8.2002, 1♂; "Prospect Nauki" avenue, hills "Lysa Gora", bushes, 8.05.2003, 4♂; Podil District: Shevchenko square, shores of lakes, 27.09.2006, 1♂ (Yu. Verves). Odesa City: Hydrobiological Station of University, 26.08.2009, 3♂, 6♀ (Yu. Protzenko). Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 16♂, 1♀ (Yu. Verves).

56. *Myorhina (s. str.) pandifera* (Blackith and Pape, 1999)

Distribution: Palaearctic: Europe: AT, CH, CZ (Moravia), DE, FR (mainland), HR, IT (mainland), PL, RO, SK, UA: Chernivtsy Region.

This species prefers habitats (alp steppe and beech forests) at elevations of 600-1750 m a. s. l. (Povolný & Šustek, 1983; Verves, 2001).

57. *Myorhina (s. str.) socrus* (Rondani, 1860)

Distribution: Palaearctic: Europe: AD, AL, AT, BG, CH, CZ (Moravia), DE, EE, FI, FR (mainland), GR, HU, IT (mainland and Sicily), PL, RS, RU (Kaliningrad, Karelia and Leningrad Regions), SK, UA; Asia: RU (Dagestan). UA: Cherkasy, Chernivtsi, Crimea, Dnipropetivsk, Kyiv and Poltava* Regions.

This species is reared in the laboratory from chopped grasshoppers (Richet et al., 2011). Flies are strictly heliophilous and ascend to considerable altitudes up to more than 1600 m a. s. l., showing hilltopping strategy in mountains. At lower elevations they seek sunlit hilltops in forested habitats and occur also on sea shores. Adult flies visit decaying small carcasses and faeces (Povolný & Verves, 1990, 1997); feed on flowers of *Rhamnus frangula* and *Peucedanum cervaria* (Draber-Moňko, 1973).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, Shelestiv I., bushes at coast of Dnipro, 24.06. and 19.7.1988, 2♂ (S. Zrazhevsky); Liplyave village, 9.08.2003, 1♂ (A. Drozdovska). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 24.08.2000, 1♂. Poltava Region: Pyryatyn District: Shkuraty village, meadows, 17.07.2009, 1♂ (Yu. Verves).

58. *Myorhina (s. str.) soror* (Rondani, 1860)

Distribution: Palaearctic: Europe: AT, BG, CH, CZ (Moravia), DE, DK, EE, ES, FR (mainland), HR, HU, IE, IT (mainland and Sicily), NO, PL, RO, RU (Kaliningrad and Leningrad Regions), SE, SK, UA; North Africa: ES (Canary Is.); Asia: AM, AZ, GE, IL, RU (Chechnya), SY, TR. UA: Cherkasy, Chernivtsi, Crimea, Ivano-Frankivsk, Kherson, Zakarpattyia and Zaporizhzhya Regions.

Larvae are developed in terrestrial snail *Cantareus aspersus* (Séguy, 1921) and reared in the laboratory from chopped grasshoppers (Richet et al., 2011). Flies are heliophilic and prefer limestone habitats, mainly cliffs of mountain elevations, sometimes up to 2300 m a. s. l., less common at lower elevations and in other edaphic conditions, especially where calcareous rocks outcrop; feed at flowers of *Heracleum* (Menzel & Ziegler, 2002; Povolný, 1999; Povolný & Verves, 1997; Richards, 1960).

Material examined: Crimea: Bakhchysaray District: Beregove village, sandy area, 4-8.08.2004, 7♂ (Yu. Verves).

59. *Myorhina (s. str.) villeneuvei* (Böttcher, 1912)

Distribution: Palaearctic: Europe: AT, BE, BG, BY, CZ (Moravia), DE, EE, ES, FI, FR (mainland), HU, IT (mainland), MNE, NL, PL, RS, RU (Bashkortostan, Karelia, Leningrad, Tambov, Voronezh and Yaroslavl Regions), SE, SK, UA, UK; Asia: CN (Heilongjiang, Xinjiang), JP

(Hokkaido), RU (Altai and Primorye Regions). UA: Cherkasy, Chernigiv*, Chernivtsi, Ivano-Frankivsk, Kyiv and Zhytomyr Regions.

Larvae are developed in dead insects. Adult flies feed at aphid excreta, accompany humid habitats, e. g. lowland forests near rivers and ponds, acid natural meadows and swamps (Artamonov, 1996; Povolný & Verves, 1997; Verves & Khrokalo, 2006).

Material examined: Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 7.07.-19.08.2000, 8 ♂, 1 ♀. Kyiv City: Holosiiv District: "Didorovsky" pond, humid banks, 25.08.1999, 1 ♂; Dnipro District: Moscow bridge, 2 km N, island on Dnipro, 16. and 30.05.2008, 2 ♂. Kyiv Region: Brovary District: Zazymya village, 5 km N, meadows nr Desna river, 1.08.2001, 2 ♂ (Yu. Verves).

60. *Myorhina (Mehria) nemoralis* (Kramer, 1908)

Distribution: Palaearctic: Europe: AT, BG, BY, CH, CZ (Moravia), DE, FR (mainland), FI, HR, HU, IT (mainland), NL, NO, PL, RO, RS, SE, SK, UA; Asia: CN (Neimenggu), KZ, RU (Karachay-Cherkessia, Krasnoyarsk and Magadan Regions). UA: Cherkasy, Chernigiv*, Chernivtsi, Ivano-Frankivsk, Kyiv, Poltava, Zakarpattya and Zhytomyr Regions.

Flies feed on flowers in mesophilic herbaceous localities: meadows, forest borders etc. (Verves & Khrokalo, 2006) at altitudes up to 2100 m a. s. l. (Povolný & Verves, 1990).

Material examined: Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 19.08.2000, 1 ♂ (Yu. Verves).

61. *Pandelleana protuberans* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AT, BG, CH, CZ (Moravia), DE, ES, FR (mainland and Corsica), HR, HU, IE, IT (mainland and Sicily), MD, NL, PL, RS, RU (Orenburg, Voronezh), SK; Asia: AM, AZ, CN (Hebei, Shandong, Shanxi, Xinjiang), CY, GE, KZ, RU (Kabardi-Balkaria, Karachay-Cherkessia and Novosibirsk Regions), TR. UA: Chernivtsi, Crimea, Dnipropetrovsk, Ivano-Frankivsk, Kherson, Luhansk, Vinnytsia* and Zaporizhzhya Regions.

Larvae are predators of eggs of lizards *Iberolacerta aranica*, *I. aurelio* and *I. bonnali* in Spanish Pyrenees at alt. 1100 m a. s. l. and *Podarcis muralis* at alt. 100 m a. s. l. (Arribas & Galán, 2005; Pape & Arribas, 1999). This species reared in the laboratory on raw hen's eggs (Richet et al., 2011). Flies active in warm dry habitats, especially on limestone, loess and sand, from ultimo May to primo July, with maximum flight activity in June; flies accompany undisturbed, natural, xeric and xethermophilic habitats, especially of limestone, loess and sand ascending elevations up to 1000 m a. s. l. (Povolný, 1996).

Material examined: Luhansk Region: Antratzyt district: Dyakove village, 9.07.2000, 1 ♂ (S. Konovalov). Vinnytsia Region: Chechelnyk District: Chechelnyk Sity, 4,5 km S, "Karmelyuk's Podillya" National Nature Park, "Vyshenke" locality, 27.05.2014, 1 ♂ (V. Gorobchysyn).

62. *Sarina olsoufjevi* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: UA; Asia: AM, AZ, CN (Jilin, Liaoning), JP (Honshu), RU (Dagestan and Primorye Regions). UA: Cherkasy, Crimea*, Dnipropetrovsk and Kyiv Regions.

Flies prefer mesophilic meadows and forest borders (original data).

Material examined: Crimea: Lenino District: Qazan Tip State Reserve, 13.05.2005 & 19.07.2007, 2 ♂ (L. Khrokalo, Yu. Verves).

63. *Sarina sexpunctata* (Fabricius, 1805)

Distribution: Palaearctic: Europe: AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, ES, FI, FR (mainland), GR, HR, HU, IE, IT (mainland), NL, NO, PL, RO, RS, RU (Kalininograd, Karelia, Leningrad, Moscow, Perm and Voronezh Regions), SE, SK, UA, UK; North Africa: ES (Canary Is.); Asia: AM, CN (Beijing, Heilongjiang, Jilin, Liaoning, Sichuan, Tianjin, Xinjiang), JP (Hokkaido, Honshu), KZ, MN, RU (Amur, Chita, Chukotka, Kamchatka, Khabarovsk, Krasnoyarsk, Kurily, Magadan, Novosibirsk, Primorye and Sakhalin Regions), TR. UA: Cherkasy, Chernigiv,

Chernivtsi, Crimea, Dnipropetivsk, Ivano-Frankivsk, Kherson, Kyiv, Zakarpattya and Zhytomyr Regions.

Larvae are the parasites of egg cocoons of spiders *Larinoides cornutus* (Finch, 2005; Mik, 1890), and *Clubiona* spp. (Lundbeck, 1927). This species found mostly at lower elevations, especially in humid warm lowground forests, and undisturbed habitats on forest margins up to foothills of mountains (Povolný & Verves, 1997); associated with limestone territories or lowland flood-plain forests (Kejval, 1998); feed on excreta of aphid *Eleucanium corni*, flowers of *Mentha* sp. (Draber-Moňko, 1973), *Frangula alnus* (Čepelák, 1956), Asteraceae, Euphorbiaceae etc. (Povolný & Verves, 1997); visit the small corpses of vertebrate animals (Blackith & Blackith, 1990).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 7.06.2003, 1 ♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 11-12.07.2000, 3 ♂ (Yu. Verves).

64. *Thrysocnema incisilobata* (Pandellé, 1896)

Distribution: Palaearctic: Europe: AD, BE, BG, BY, CH, CZ (Moravia and Bohemia), DE, DK, EE, ES, FI, FR (mainland), HR, HU, IE, IT (mainland and Sardinia), LT, MK, MD, NL, NO, PL, RO, RU (Bashkortostan, Ivanovo, Karelia, Moscow, Leningrad, Lipetsk, Voronezh and Yaroslavl Regions), RS, SE, SK, UA; Asia: AM, AZ, GE, KZ, RU (Dagestan, Kabardi-Balkaria, Kamchatka, Novosibirsk, Tyumen, Stavropol and Sverdlovsk Regions), TR, UZ; UA; North Africa: DZ; Asia: AM, AZ, GE, KZ, RU (Dagestan, Kabardi-Balkaria, Kamchatka, Novosibirsk, Stavropol and Sverdlovsk Regions), TR, UZ. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kyiv, Lviv, Poltava, Rivne, Sumy, Ternopil, Vinnytsia*, Volyn, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae are developed in faeces, sometimes corpses (Séguy, 1941; Verves & Khrokalo, 2006); known as facultative predators of lepidopteran pupae *Lymantria monacha* (Komárek, 1938), endoparasites of locust *Stauroderus maroccanus* (Séguy, 1941), snail *Otala lactea* (Keilin, 1919), and not develop in dead snails (Blackith et al., 1994); caused urogenital myiasis of 86-year old man (Pospíšil & Povolný, 1980). Eurycious species with strong culturophilic tendencies, occurring in secondary changed habitats; adult flies associated with limestone territories or lowland flood-plain forests (Kejval, 1998; Povolný & Verves, 1997); visit the small corpses of vertebrate animals (Blackith & Blackith, 1990), fruits, meat and faeces (Povolný & Verves, 1997), flowers of *Anethum graveolens* (Verves, 2003), *Angelica* sp., *Carum carvi*, *Daucus* sp., *Euphorbia cyparissias*, *Pastinaca* sp., *Rhamnus cathartica* (Draber-Moňko, 1973; Séguy, 1941), *Pimpinella saxifraga* (Girfanova, 1958), *Taraxacum officinale* (original data).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 16-19.08.1988, 2 ♂ Trakhtemyriv village, 30 km N of Kaniv, 9.07.1988, 1 ♂; (S. Zrazhewsky); 20.05.2003, 1 ♂; Uman City: Dendrological park "Sofivka", 11.06.2005, 3 ♂; 13-14.06.2006, 2 ♂, 2 ♀. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 11.06.-25.08.2000, 46 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 5-13.08.1999, 41 ♂ (Yu. Verves); Korop District: Obolonye village, near forest, 17.07.2003, 1 ♂; Koryukivsky District: Gutyshche village, near pond, 3-7.07.2003, 1 ♂ (L. Khrokalo, A. Drozdovska). Crimea: Simferopol, 27.08.2004, 1 ♂ (Yu. Verves). Kyiv City: Holosiiv District: Baykove Cemetery, 7.08.-30.09.2003, 3 ♂; "Didorovsky" pond, humid banks, 4.09.1999, 1 ♂; 11.07.2002, 21.09.2003 & 28.06.2004, 5 ♂; National Exhibition Centre, busches, 27.08.1999, 1 ♂; "Prospect Nauki" avenue, hills "Lysa Gora", bushes, 17.08.2004, 1 ♂; "Theophania" park, 11.06. - 29.07.2013, 23 ♂, 2 ♀; Vasylkivska street 33, yard, 28.07.2009 & 25.06.2010, 12 ♂; Vasylkivska street 98, yard, 15.05.-22.07.2002, 10 ♂; Williams street, dry meadows, 10-28.07.2001 & 12.08.2002, 9 ♂ (A. Drozdovska, Yu. Verves). Kyiv Region: Boryspil District: Rozhny village, bushes at coast of Dnipro, 18.08.1999, 1 ♂; Brovary District: Zazymya village, 5 km N, 1.08.2001, 3 ♂; Kyiv-Svyatoshyn District: Gostomel, 4 km N, meadows at right bank of Irpin river, 8.07.2001, 3 ♂; Obukhiv District: Velyki Dmytryovychi village, forest nr bog, 4.07.1994, 27.06.1997, 2.05. & 4.07.1999, 10 ♂; Tatzenky village, 3 km S, at leaves and ground at border of pine forest nr lake, 14.09.2003, 3 ♂ (Yu. Verves); Skvyra District: Pustovariivka village, 26-27.06.2004, 2 ♂ (A. Drozdovska). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13 and 15.08.2010, 1 ♂; Pyryatyn District: Bilotzerkivtsi village,

locality Murentzeve, 15.08.2010, 1 ♂; Davydivka village, meadows, 15.07.2009, 1 ♂; Deymanivka village, 16.7.2005, 1 ♂; Grabarivka village, meadows near Ruda river, 15.07.2009, 21 ♂, 3 ♀; Keybalivka village, meadows at bank of Uday river, 11-17.07.2009, 2 ♂, 1 ♀; Kharkivtzy village, 2 km S, locality "Velyki Solontzi", 13-14.07.09, 1 ♂; Masalske village, meadows at bank of Uday river, 14.08.2010, 1 ♀ Shkuraty village, meadows, 17.07.2009, 2 ♂; (A. Drozdovska, V. Gorobchysyn, O. Tkachenko, Yu. Verves). Sumy Region: Sumy District: Mogrytzya village, 7-9.08.2009, 1 ♂ (Yu. Protzenko); Romny City, banks of Romenka river, meadows and bushes, 21-30.08.2009, 13 ♂; at flowers of *Taraxacum officinale*, 5.05.2013, 1 ♂. Vinnytsia Region: Chechelnyk District: "Karmelyuk's Podillya" National Nature Park, Lyubashivka village, 5.07.2013, 1 ♂ (V. Gorobchysyn). Zakarpattyia Region: Mizhgirrya District: Kolochava village, 2-4 km S, along stream Kvasovetz, 600-1000 m a. s. l., 12.08.1995, 2 ♂; 5 km W, 1000-1400 m a. s. l., alp steppe, 14-15.08.1995, 2 ♂; Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140 m a. s. l., 23.08.2014, 1 ♂ (Yu. Verves); Velyko-Berezna District: Vyskha village, pupa from uninhabited nest *Sceliphron* sp., collected 10.01.2010, reared 10-18.06.2010, 1 ♂ (D. Gladun). Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 1 ♂; meadows and bushes, 4-15.06.2008, 1 ♂; Melitopol City: "Kamyany Mogly" Reserve, at stones, 28.08.1997, 4 ♂ (Yu. Verves).

65. *Thyrsocnema kentejana* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: AT, BG, CH, FI, FR (mainland), NO, RO, SE, SK, UA; Asia: CN (Hebei, Heilongjiang, Jilin, Liaoning, Neimenggu, Qinghai, Shanxi, Sichuan, Xinjiang), KZ, MN, RU (Altai, Amur, Buryatia, Chita, Khabarovsk, Krasnoyarsk, Primorye and Tuva Regions), TJ, Tibet. Oriental: CN (Yunnan), IN (Jammu and Kashmir), PK (North-West Frontier). Nearctic: US (Alaska). UA: Zakarpattyia Region.

Larvae are developed in corpses of insects, birds, small mammals, faeces (Artamonov, 1993). Flies feed on flowers, faeces, corpses; prefer mesophilic forest borders, meadows; show partly culturophile tendencies in eastern parts of distribution (Povolný & Verves, 1997; Verves & Khrokalo, 2006).

Material examined: Zakarpattyia Region: Mizhgirrya District: Kolochava village, 2-4 km S, along stream Kvasovetz, 600-1000 m a. s. l., 12.08.1995, 1 ♂ (Yu. Verves).

Subtribe Parasarcophagina

66. *Bercaea africa* (Wiedemann, 1824)

Distribution: Palaearctic: Europe: AL, AT, BA, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, ES (mainland and Baleares Is.), FR (mainland and Corsica), GR, HR, IE (mainland and Clare I.), IT (mainland, Sardinia and Sicily), LT, LU, LV, MD, MK, MNE, MT, NL, NO, PL, PT, RO, RS, RU (Astrakhan, Bashkortostan, Ivanovo, Karelia, Leningrad, Lipezk, Moscow, Pskov, Tatarstan, Tula, Volgograd and Voronezh Regions), SE, SI, SK, TR, UA, UK; North Africa: DZ, EG, ES (Canary Is.), LY, MA, PT (Azores and Madeira), TN; Asia: AF, AM, AZ, CN (Beijing, Gansu, Hebei, Henan, Neimenggu, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Xinjiang), CY, EG (Sinai), GE, IL, IQ, IR, JO, KG, KP, KR, KW, KZ, LB, MN, PA (incl. Gaza Strip,), RU (Alania, Altai, Amur, Dagestan, Chechnya, Ingushetia, Khabarovsk, Krasnodar, Primorye, Stavropol and Tuva Regions), SA, SY, Tibet, TJ, TM, TR, UZ. Nearctic: CA (Ontario and Quebec), US (California, Connecticut, Colorado, Florida, GE, Illinois, Iowa, Kansas, Massachusetts, Missouri, Montana, New Jersey, New Mexico, New York, North Carolina, Oregon, Texas and Wyoming). Afrotropical: AO, BF, BI, BJ, BW, CG, CI, CM, ER, ET, GA, GH, GM, KE, LR, LS, MR, MW, MZ, NA, NG, RW, SH, SL, SO, SD, TZ, TG, UG, YE, ZA, ZM, ZW, Madagascan: MG, MU (mainland, Cargados Is. and Rodrigues Is.), RE, SC (Aldabra Is., Amirantes Is., Granitic Is. and Mahe I.). Oriental: BT, IN (Arunachal Pradesh, Assam, Bihar, Himachal Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Nicobar Is., Punjab, Sikkim, Uttar Pradesh and West Bengal), NP, PK (Karachi); TH, VN. Australasian/Oceanian: AU (New South Wales, Queensland, South AU and Western AU), CL (Easter I.), EC (Galapagos Is.), US (Hawaii). Neotropical: AR (Buenos Aires and Mendoza Provinces), BR (Rio de Janeiro and Rio Grande do Sul), CR, CU, MX,

PA, PY. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetrovsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae of this eusynanthropic species are found in decaying animal matter, generally in human faeces, including refuse pits, lavatories, dustbins; rarely in bovine and buffalo pork, dung, rotten meat (Al-Misned, 2000, 2003a, b; Al-Misned & Abou Fannah, 2000; Al-Misned et al., 1999; Artamonov, 1983; Gadzhey, 1963; Gorbacheva, 1956; Kirchberg, 1961; Stackelberg, 1956; Sukhova, 1952; Sychevskaya, 1957; Zakharova, 1961), beached cephalopod and echinoid carrion (Artamonov, 1983), dead insects (Zumpt, 1972), piglet carcasses (Prado e Castro et al., 2010), and human remains; the latest is important for forensic investigations (Al-Mesbah, 2010; Cherix et al., 2012; Di Fazio et al., 1998; Frost et al., 2010; Goff, 1991; Intronà et al., 1998; Kim et al., 2014; Leccese, 2004; Vanin et al., 2007); reared in the laboratory on beef (Richet et al., 2011). As a result, this species can breed in decaying meat, rotten floodstuffs and similar organic matter, but faeces are its main habitat (Hall & Smith, 1993). The larvae were the early arrivals in the fresh stage of carcasses of wildlife species: greater cane rat, *Thyronomys swinderianus*; two-spotted palm civet, *Nandina binotata*; the mona monkey, *Cercopithecus mona*; the Maxwell's duiker, *Philantomba maxwelli* in rain forest (Ndueze et al., 2013). Maggots cause different types of myiasis (Mulieri et al., 2010): occasional intestinal (Aldrich, 1916; Ali-Khan & Ali-Khan, 1974; Khan, 1987; Udgaonkar et al., 2012), cutaneous (Calero, 1948), nosocomial (Dutto & Bertero, 2010; Husain et al., 1993) and aural (Braverman et al., 1994; Cerruti, 1913a, b; Magliulo et al., 2000) myiasis of humans and wound myiasis in mammals: dogs (Khan, 1974; Principato et al., 1994), cattle (Dik et al., 2012) and known as predators of pupae of moth *Thaumetopoea pityocampa* (Biliotti, 1958), endoparasites (parasitoids) of snails *Cantareus asperasus*, *Cepaea nemoralis*, *Cernuella virgata*, *Eobania vermiculata*, *Theba pisana* (Berner, 1960; Coupland & Baker, 2004), millipede *Sechelleptus seychellarum* (Gerlach et al., 2005), locusts *Dociostaurus maroccanus*, *Locusta migratoria*, *Melanoplus* sp., *M. differentialis*, *Schistocerca cancellata*, *S. gregaria* (Rees, 1973). Adult flies attracted to faeces, dung, lavatories, rotten meat, decomposed fruits, mixed vegetations and flowering plants (Artamonov, 1992; Verves & Khrokalo, 2009). This species is wintering in pupal phase in soil in temporary climates (Lobanov, 1966). Flies were collected in mountains at altitudes up to 3000 m o. s. l. (Feng, 2006). Imagoes of great medical and veterinary importance as a vectors of disease agents: helminthes eggs *Ascaris lumbricoides* (Greenberg, 1971; Sychevskaya & Petrova, 1958), *Hymenolepis nana* (Alakhverdyan & Zakharova, 1961), *Taeniarhynchus saginatus* (Nadzhafarov, 1967), *Trichocephalus trichiurus* (Alakhverdyan & Zakharova, 1961), protozoan *Bodo caudata*, *Entamoeba histolytica* (Trofimov & Engelgart, 1965), and bacterial pathogens: *Aerobacter aerogenes*, *Bacillus megaterium*, *Diplococcus pneumoniae*, *Proteus rettgeri*, *P. vulgaris* (Greenberg, 1971), *Escherichia coli* (Greenberg, 1971; Shura-Bura, 1952; Shura-Bura & Gaydukova, 1975), *E. intermedia*, *Salmonella enteritidis*, *S. paratyphi* "A" and "B", *S. typhi* (Greenberg, 1971), *Shigella dysenteriae* (Greenberg, 1971; Sychevskaya et al., 1959), and polioviruses (Bang & Glaser, 1943; Greenberg, 1971).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, 19.08.1988, 1 ♂ (S. Zrazhewsky); 3.06.2003, 1 ♂; Uman City: "Sofiivka" dendrological park, 11.06.2005 & 13-14.06.2006, 5 ♂. Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 5-11.08.1999, 5 ♂. Crimea: Bakhchysaray District: Beregove, loam sea shores and sandy area, 14-16.08.1996, 1 ♂; 15-25.08.2001, 8 ♂, 1 ♀; 4-11.08.2004, 8 ♂, 1 ♀; Lenino District: Qazan Tip State Reserve, 17-23.07.2007, 7 ♂; Simferopol, 27.08.2004, 1 ♂. Kyiv City: Dnipro District: Moscow bridge, 2 km N, island on Dnipro, 30.05. & 29.08.2008, 3 ♂. Holosiiv District: "Didorovsky" pond, humid banks, 11.07-9.08.2002, 1 ♂; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 1 ♂; "Feofania" park, dry forest near pond, 28.07.2002, 1 ♂; Kozacha street, on leaves and walls, 7.07.2005, 1 ♂; Sovky hole, coast of pond, humid meadow, 29.09.2002, 1 ♂; Kozachy I. at Dnipro, 12 km S of Kharkiv Bridge, 9.09.2009, 1 ♂; Olzhyn I. at Dnipro, 10 km S of Kharkiv Bridge, 16.09.2009, 5 ♂. (Yu. Verves); Uralska street, 3-6.07.2009, 2 ♂, 1 ♀ (A. Drozdovska); Vasylkivska street 33, yard, 25.06. - 5.07.2008 & 18.05.-5.10.09.2009, 27 ♂, 1 ♀; Vasylkivska street 98, yard, 2.05.-30.09.2002, 27 ♂, 2 ♀; Baykove Cementery, 13.07., 30.09.2003 & 16.08.2004, 4 ♂, 2 ♀; Obolon District: unnamed island on Dnipro river, N 50°30'25", E 30°31'16", 26.05.2011, 4 ♂, 1 ♀; Verbne Lake, 31.08.2004, 3 ♂; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 1 ♂; Podil District: Shevchanko

square, humid meadow nr pond, 15.07.2005 & 27.09.2006, 8 ♂, 1 ♀; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 10 ♂. Kyiv Region: Boryspil District: Rozhny village, bushes at coast of Dnipro, 15-17.08.1999, 2 ♂; Kyiv-Svyatoshyn District: Moshchun village, humid meadows near forest stream, 8.09.2003, 1 ♂¹²; Obukhiv District: Ukrainka City: coast of Dnipro, dry meadow and bushes, 14.09.2003, 1 ♂; Velyki Dmytroychi village, ground road, 10.07.1999, 1 ♂; (Yu. Verves); Skvyra District: Pustovariivka village, 26-27.06.2004, 1 ♂ (A. Drozdovska). Luhansk Region: Stanychno-Luhanska District: environs of Nova Kindrashivka village, sandy area, 1.08.2008, 1 ♂; Sverdlovsk District: Provallya village, 27-29.07.2008, 1 ♂ (A. Drozdovska). Mykolaiv Region: Ochakiv District: Kinburn sandy area, 16.05.2003, 2 ♂, 2 ♀ (Yu. Protzenko). Odesa Region: Ismail City, 4-8.08.2009, 1 ♂, 1 ♀ (V. Corobchysyn). Poltava Region: Pyryatyn District: Keybalivka village, meadows near Uday river, 14.07.2009, 1 ♂. Sumy Region: Romny City, 25.08.2009, 1 ♂. Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 1 ♂; meadows and bushes, 4-15.06.2008, 13 ♂; Berdyansk City, sandy spit at Azov Sea, 14-17.08.1994, 2 ♂; Melitopol City: “Kamyany Mogly” Reserve, at stones, 28.08.1997, 3 ♂; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 11-26.08.1997, 13 ♂ (Yu. Verves).

67. *Liopygia (Jantia) crassipalpis* (Macquart, 1839)

Distribution: Palaearctic: Europe: AL, AT, BG, CZ (Moravia), DE, ES, FR (mainland and Corsica), GR, HR, HU, IT (mainland, Sardinia and Sicily), MD, MK, MNE, MT, PT, RO, RS, RU (Astrakhan and Voronezh Regions), SK, TR, UA; North Africa: DZ, EG, ES (Canary Is.), LY, MA, PT (Azores and Madeira), TN; Asia: AF, AM, AZ, CN (Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Sichuan, Tianjin, Xinjiang), CY, EG (Sinai), Gaza Strip, GE, IL, IR, IQ, JP (Hokkaido, Honshu, Shikoku), KG, KP, KR, KZ, LB, MN, PA, RU (Alania, Altai, Bashkortostan, Buryatia, Chechnya, Chita, Dagestan, Krasnodar, Novosibirsk and Primorye Regions), SA, Tibet, TJ, TM, TR, UZ. Nearctic: CA (British Columbia and Quebec), GL¹³, US (California, Connecticut, District Columbia Florida, GE, Illinois, Massachusetts, New York, North Carolina, Pennsylvania and Philadelphia). Afrotropical: ZA (Eastern Cape and Gauteng). Oriental: CN (Zhejiang), PK (Sind). Australasian/Oceanian: AU (Capital Territory, New South Wales, Queensland, South AU, Victoria, Western AU), MH, NZ (South I.), PF (Society Is.), PG (New Guinea), US (Hawaii). Neotropical: “Caribbean, Central and South America” (Diaz & Kaufman, 2011): AR (Buenos-Aires City and Province), BR (Rio Grande do Sul) CL, UY. UA: Cherkasy, Crimea, Dnipropetivsk, Donetsk, Kharkiv, Kherson, Kyiv, Luhans’k, Mykolaiv, Odesa*, Poltava and Zaporizhzhya Regions.

Larvae of this eusynanthropic species are generally necrophagous (Mulieri et al., 2010; Otranto & Stewens, 2002; Povolný & Verves, 1990, 1997; Rohdendorf, 1937; Stackelberg, 1956; Zakharova, 1961, 1965) and bred in rotten meat (Artamonov, 1983; Stackelberg, 1956), human remains (Castillo Mirables, 2002; Martínez-Sánchez et al., 2006; Meiklejohn, 2012), dead animals (Mulieri et al., 2010; Stackelberg, 1956): cattle (Stackelberg, 1956), mouses (Lopes, 1959), rabbits (Krüger et al., 2010; Yang et al., 2010), pigs (Ma et al., 2000), locusts (Rukavishnikov, 1930), etc. This species reported as forensic indicator (Bonacci et al., 2014; Oliva, 1997; Romero et al., 2003). Maggots cause occasional traumatic and cutaneous (Ali Khan & Ali Khan, 1974; Cutrupi et al., 1986; James, 1947; Lukin, 1989a, b; Ravasan et al., 2012; Sevgili et al., 2004a; Zumpt, 1965), nosocomial (Magnarelli & Andreadis, 1981) aural (Morris, 1987), intestinal (Nagakura et al. 1984; Shiota et al., 1990) and ophthalmomyiasis (Uni et al. 1999) of humans; wound myiasis in reptilian host *Uromastyx hardwicki* (Ali Khan & Ali Khan, 1974) and mammals: cattle, dogs, gazelle, pigs, sheep (Sevgili et al., 2004a, b; Trofimov, 1957; Zumpt, 1965). Maggots were registered as predators of eggs sucks of locusts *Schistocerca cancellata* (Silveira et al., 1958) and *S. gregaria* (Bogush, 1959), pupae of spruce budworm, *Choristoneura fumiferana* (Arthur & Coppel, 1953) and as facultative parasites of adult *Schistocerca gregaria* (Séguy, 1941). Adult flies attracted to rotten meat, corpses (Prado e Castro et al., 2010; Stackelberg, 1956), faeces and dung (Martínez-Sánchez et al., 2000b) and feed on flowers of *Anethum graveolens* (Verves, 2003) and *Condalia* spp. (Mulieri et al., 2010). Flies were collected in mountains at altitudes up to 1850 m o. s. l. (Pekbey &

¹² Postabdomen of this specimen is entirely shining-black in contrast with usual reddish-orange colour.

¹³ After Diaz & Kaufman, 2011.

Hayat, 2010). This fly has great medical and veterinary importance as a vector of disease agents helminthes eggs *Ascaris lumbricoides*, bacterial pathogens *Escherichia* spp., *Salmonella* spp., etc (Greenberg, 1971).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, 3.06.2003, 1 ♂. Crimea: Bakhchysaray City, stoned hill, 400 m o. s. l., 12.08.1996, 1 ♂; sandy area, 1.08.2004, 1 ♂. Kyiv City: Desna District: Moscow bridge, 2 km N, unnamed island on Dnipro, 30.05. & 29.08.2008, 3 ♂; Holosiiv District: Baykove Cemetery, 7.08.2003, 3 ♂; "Sovky hole", at wall of building, 15.09.2009, 1 ♂ (Yu. Verves); "Prospect Nauki" avenue, garden in yard, 26.07.2002, 1 ♂ (A. Drozdovska); Vasylkivska street 33, yard, 18.05. - 5.10.2009, 27.05. & 24-25.06.2010, 29 ♂; 4 ♀; Vasylkivska street 98, yard, 29.04.-30.09.2002, 7 ♂, 3 ♀; indoor of laboratory building, on windows, 5.09.2002, 1 ♀; Williams street, dry meadows, 12-19.08.2002, 4 ♂; Obolon District: Verbne Lake, sandy shore, 31.08.2004, 3 ♂; Obolon island, N 50°30'25", E 30°31'16", 28.04., 16.06. & 22.09.2011, 6 ♂, 1 ♀; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000 & 27.09.2006, 25 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 3 ♂. Mykolaiv Region: Ochakiv District: Parutino village, debris of antic City Olvia, 16.07.2006, 3 ♂, 1 ♀ (Yu. Verves). Odesa Region: Ismail City, 4-8.08.2009, 1 ♀ (V. Corobchysyn). Poltava Region: Grebinky District: environs of Zhovtneve village, meadows, 13.07.2009, 1 ♀. Zaporizhzhya Region: Melitopol City: "Kamyany Mogly" Reserve, at stones, 28.08.1997, 5 ♂; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 10-26.08.1997, 11 ♂, 2 ♀ (Yu. Verves).

68. *Liopygia (Thomsonea) argyrostoma* (Robineau-Desvoidy, 1830)

Distribution: Palaearctic: Europe: AL, AT, BA, BE, BG, BY, CH, CZ (Moravia), DE, DK, ES (mainland and Balearic Is.), FR (mainland), GI, GR, HR, HU, IT (mainland, Sardinia and Sicily), MD, MK, MNE, NL, PL, PT, RO, RS, RU (Bashkortostan, Moscow, Ryazan and Voronezh Regions), SE, SI, SK, TR, UA, UK (England); North Africa: DZ, EG, ES (Canary Is.), PT (Azores and Madeira), TN; Asia: AF, AM, AZ, CN (Qinghai), CY, EG (Sinai), Gaza Strip, GE, IL, IQ, IR, KG, KZ, MN, PA, RU (Alania, Amur, Chechnya, Dagestan, Khabarovsk and Primorye Regions), SA, SY, TJ, TM, TR. Nearctic: BM, CA (Quebec), US (California, INna, Iowa, Missouri, New York, North Carolina, Pennsylvania and Texas). Afrotropical: SH, ZA (Western Cape). Oriental: IN (Gujarat, Haryana, Rajasthan, Uttar Pradesh); PK (Kalash Walley and Punjab). Australasian/Oceanian: MH (including Wake I.), US (Hawaii). Neotropical: AR (Buenos Aires City and Province), BR (Rio Grande do Sul), CL, CU. UA: Cherkasy, Chernigiv, Chernivtsi, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Kirovograd, Crimea, Kyiv, Luhansk, Mykolaiv, Odesa, Poltava, Sumy*, Vinnytsia, Zakarpattyia and Zaporizhzhya Regions.

This subcosmopolitan species is regarded as eusynanthropic (Povolný & Znojil, 1989) *r*-strategist (El-Shazly et al., 1995). Larvae mainly necrophagous and reared from rotten meat (Aldrich, 1916; Grassberger & Reiter, 2002; Mulieri et al., 2010; Rohdendorf, 1937; Salwa & Abdel-Rahman, 1983; Zakharova, 1965), decaying fish (Artamonov, 1987), corpses of humans and other vertebrates (Denno & Cothran, 1975; Grassberger & Frank, 2004; Romero et al., 2003), rarely in human (Sychevskaya, 1972) and cat faeces (Kühlhorn, 1986), poultry droppings (Yates, 1967), dead or dying snails (Grassberger & Reiter, 2002; Groth & Reissmüller, 1973), eggpods and adult locusts: *Dociostaurus maroccanus* (Künckel, 1905), *Locusta migratoria* (Rohdendorf, 1937), *Schistocerca gregaria* (Künckel, 1905), *S. paranensis* (Blanchard, 1933); scarabaeid beetles: larvae of *Melolontha hippocastani* (Rohdendorf, 1937), adults of *Lachnostenra* sp. (Aldrich, 1916), *Onconotus* sp. (Rohdendorf, 1937), imago of cerambycid beetle *Aelostes sorta* (Povolný & Verves, 1997), pupae of lepidopteran *Lymantria monacha* (Baer, 1921), and bred from egg nests of loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtle (McGowan et al., 2001). This species reared in the laboratory on beef and bred from a dead mole; ♀ larviposited on the second substrate while still outdoors (Richet et al., 2011). There are several records of causing wound (Burgess & Spraggs 1992; Guimarães et al., 1983; James, 1947; Mazza & Basso, 1939; Otranto & Stewens, 2002; Ravasan et al., 2012; Saccà, 1945; Sevgili et al., 2004b), aural (Fawzy, 1991), vaginal (Aspöck & Leodolter, 1970) and intestinal (Töld, 1913) human myiasis and wound myiasis of sheep (Baranov & Jezic, 1928; Otranto & Stewens, 2002; Trofimov, 1957; Zumpt, 1965). Several authors (Cherix et al., 2012; Desmyter & Gosselin, 2009; Leclercq, 1976; Martínez-Sánchez et al.,

2006 a, b; Mohamed Aly & Wen, 2013; Mohamed Aly et al., 2013a, b; Oliva, 1997; Romero et al., 2003) reported this species as an important forensic indicator. Maggots attack other dipterous larvae in faeces (Richet et al., 2011). Puparia are developed in soil (Stackelberg, 1956), sometimes in bird nests: *Columba* sp. (Woodroffe, 1953), *Passer montanus* (Draber-Mońko, 1997), *Troglodytes aegon* (Eicher, 1937; McAtee, 1927). Flies prefer outdoor (Benecke, 1998; Mulieri et al., 2011; Stackelberg, 1956), and occasionally indoor (Aradi & Mihályi, 1971), urban locations, but often were observed in more or less outstanding places: foothills (Aivazova & Safonova, 1973), suburban gardens (Allen, 1966), deserts (Charykuliev, 1965), pineapple growing section (Illingworth, 1928), limestone territories, lowland flood-plain forests (Kejval, 1998), grasslands (Mulieri et al., 2008) and bushes (Nandi, 2002) at altitudes up to 2000 m o. s. l. (Pekbey & Hayat, 2010; Sychevskaya, 1972). Adults are attracted to fresh and rotten meat, carcasses, faeces, destroyed fruits, flowering plants (Akbarzadeh et al., 2012; Povolný & Verves, 1990, 1997; Prado e Castro et al., 2011; Richet et al., 2011; Stackelberg, 1956; Sychevskaya, 1972; Verves & Khrokalo, 2006). Flies are transmitters of bacterial agents *Escherichia coli*, *Mycobacterium leprae*, *M. phlei*, *M. tuberculosis*, *Neisseria catarrhalis* (Greenberg, 1971), and eggs of helminthes *Ascaris lumbricoides* and *Hymenolepis nana* (Verves & Khrokalo, 2006). Larvae were allowed to feed on *Trichinella spiralis*-infected mouse meat and may be its parasitic host (Maroli & Pozio, 2000).

Material examined: Cherkasy Region: Uman City: Dendrological park "Sofiivka" 11.06.2005, 2 ♂, 1 ♀. Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 12-13.08.1999, 2 ♂. Crimea: Bakhchisaray District: Beregovye village, sandy area, 11-13.08.1996, 1 ♂; Lenino District: Qazan Tip State Reserve, 19.07.2007, 1 ♂ (Yu. Verves); Theodosia Municipal Government: Karadagh Natural Reserve, 10-13.07.2006, 1 ♂ (A. Drozdovska). Kyiv City: Holosiiv District: Vasylkivska 33, yard, 28.07., 5.10.2009 & 5.05.2010, 5 ♂, 2 ♀; Vasylkivska street 98, yard, 29.04.-28.07.2002, 3 ♂; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 2 ♂; Podil District: Shevchenko square, humid meadow nr pond, 15.07.2005 & 27.09.2006, 2 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 1 ♂ (Yu. Verves). Odesa Region: Ismail City, 4-8.08.2009, 4 ♀ (V. Corobchysyn); Odesa City, indoor, 15.10.1983, 1 ♀ (N. Berezovsky). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13 and 15.08.2010, 1 ♂; Pyryatyn District: Bilotzerkivtsi village, locality Murentzeve, 15.08.2010, 1 ♂; Keybalivka village, meadows at bank of Uday river, 11.07.2009, 1 ♂, 1 ♀; Lelyaky village, meadows at bank of Uday river, 12.08.2010, 1 ♂ (A. Drozdovska, O. Tkachenko). Sumy Region: Romny City: banks of Romenka river, meadows and bushes, 21-27.08.2009, 3 ♂. Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 2 ♂; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 10-11.08.1997, 3 ♂ (Yu. Verves).

69. *Liopygia (Varirosellea) uliginosa* (Kramer, 1908)

Distribution: Palaearctic: Europe: AT, BG, BY, CZ (Bohemia and Moravia), DE, ES, HR, FR (mainland), GR, DK, HU, IT (mainland and Sardinia), MD, MK, PL, RO, RS, RU (Bashkortostan, Belgorod, Ekaterinburg, Karelia, Leningrad, Nizhny Novgorod, Orenburg, Penza, Saratov and Voronezh Regions), SK, UA, UK (England); Asia: AM, AZ, CN (Heilongjiang, Jilin, Liaoning, Ningxia, Shanxi), GE, JP (Hokkaido, Honshu), KP, KR, KZ, MN, RU (Altai, Amur, Chelyabinsk, Dagestan, Irkutsk, Khabarovsk, Krasnodar, Novosibirsk, Primorye, Sakhalin I. and Tuva Regions), TJ. Nearctic: CA (Ontario), US (Massachusetts). UA: Cherkasy, Kyiv, Luhansk and Zakarpattya Regions.

Larvae are obligatory predators of lepidopteran pupae, rarely prepupae: *Aporia crataegi* (Artamonov, 1985; Kolomyietz, 1966), *Cosmotriche potatoria* (Zinovyev, 1962), *Dasychira albidentata* (Nakonechny et al., 1973; Zinovyev, 1962), *Dendrolimus pini* (Baer, 1921; Herting & Simmonds, 1976; Khitzova, 1976; Kolomyietz, 1989; Povolný, 1988), *D. sibiricus* (Girfanova & Idrisova, 1977; Kolomyietz, 1952, 1958, 1962; Stepanova et al., 1977; Zinovyev, 1962), *D. spectabilis* (Verves & Khrokalo, 2006), *Euproctis chrysorrhoea* (Grunin, 1954; Herting & Simmonds, 1976; Wyatt & Sterling, 1988), *Euxoa segetum* (Bilanovsky, 1931; Herting & Simmonds, 1976; Povolný, 1988), *Leucoma candida* (Artamonov, 1985), *Lymantria dispar* (Baranov, 1942; Belov & Panina, 1985; Čápek & Čepelák, 1970; Girfanova, 1957; Herting & Simmonds, 1976; Hoch et al., 2001; Khanislamov et al., 1958; Kolomyietz, 1958, 1966, 1987; Nakonechny, 1973a; Povolný, 1988; Shapiro, 1956; Stepanova et al., 1977; Tabakovic-Tasic et al., 2013), *L. monacha* (Herting &

Simmonds, 1976; Kolomyietz, 1958; Kramer, 1908; Nakonechny, 1973b; Povolný, 1988; Stepanova et al., 1977; Tereshkin, 1991; Tereshkin & Lobodenko, 1997), *Porthesia similis* (Kolomyietz, 1962, 1966), *Malacosoma neustria* (Bilanovsky, 1931; Draber-Moňko, 1973; Drensky, 1957; Stepanova et al., 1977), *Orgyia antiqua* (Herting & Simmonds, 1976; Kolomyietz, 1958; Nakonechny, 1973a), *Selenephera lunigera* (Nakonechny, 1973a), *Stilpnota salicis* (Kolomyietz, 1958; Stepanova et al., 1977; Yafaeva, 1977), *Vanessa xanthomelas* (Kolomyietz, 1966). This species disappears gradually from large areas in Central Europe being restricted to limited habitats (Povolný & Verves, 1990). Imagoes schizophagous (Artamonov, 1988); feed at flowering plants, *Melilotus albus* (Khitzova, 1976), etc.

Material examined: Kyiv City: Vasylkivska street 98, yard, at leaves, 18.06.2002, 1 ♂ (Yu. Verves).

70. *Liosarcophaga* (s. str.) *dux* (Thomson, 1869)

Distribution: Palaearctic: Europe: AL, BA, BG, FR (mainland and Corsica), FRU (Voivodina), GR, HU, HR, IT (mainland, Sardinia and Sicily), MK, MNE, MT, RKS, RO, RS, ES (mainland, Balearic Is. and Columbretes Is.), UA; North Africa: ES (Canary Is.), EG, LY, MA, PT (Azores), TN; Asia: AZ, CN (Anhui, Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shanxi, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Xinjiang), CY, EG (Sinai), GE, IL, JP (Honshu, Kyushu, Shikoku and Minami-Iwojima Is.), KP, KR, KZ, PA, RU (Dagestan and Krasnodar Regions), SA, Tibet, TM, TR, UZ. Afrotropical: CV. Oriental: BD, BT, CN (Fujian, Guangdong, Guangxi, Guizhou, Hainan I., Hunan, Jiangxi, Yunnan and Zhejiang); IN (Andaman Is., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Dehli, Goa, Gujarat, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal), ID (Flores, Java, Kalimantan, Lombok, Sulawesi, Sumatra and Timor); JP (Ryukyu Is.); LK, MM, MY (Kelanmtan, Kuala Lumpur, Penang, Sarawak, Selangor, and Terengganu), NP, PH (Balabac, Palawan), PK (Peshawar), SG, TH (Chiang Mai, Chiang Rai, Chon Buri, Lampang, Nan, Surat Thani, Tak and Ubon Ratchathani Provinces), TW. Australasian/Oceanian: AU (Capital Territory, Lord Howe I., New South Wales, Northern Territory, Queensland, South AU, Tasmania, Victoria, and Western AU), CX, FJ, FM (Caroline Is.: Asor, Falalop, Ifaluk, Kapingamarangi, Kusae, Lamotrek, Ponape, Satawal, Ulithi; Truk Is.: Dublon, Feran, Ton, Pata, Wena; Yap Is.: Map, Yap), GU (Bonin Is.: Chichi Jima, Haha Jima, Muko Jima), ID (Irian Jaya, and Moluccas: Ambon, Ceram), JP (Kazan Is., Ryukyu Is.), KI (Gilbert Is.: Abemama, Onotoa, Tarawa), MH (Eniwetok, Jemo, Kwajalein, Majuro, Namorik, Ujae, Ujelang, Wake, Wotje), US (Hawaii: Canton, Hawaii, Kauai, Lanai, Maui, Midway, Molokai, Oahu; Marianas: Agiguan, Agrihan, Anatahan, Rota, Saipan, Tinian), PG (Dyaul, Lavongai, New Britain; Manus I.; New Guinea); PN, PW (Angaur, Babelthuap, Koror, Ngarmalk, Ngerkabesang, Ngesebus, Ngurukdabel, Peleliu, Ulebsehel); SB, WS. UA: Crimea.

This species normally breeds in vertebrate carrion (Ameen & Huq, 1973; Hall & Bohart, 1948; James, 1947; Kano et al., 1967; Park, 1977; Senior-White et al., 1940), dead insects (Callan, 1937; Nandi, 2002; Olsoufjev, 1929; Rukavishnikov, 1930) and land snails (Beaver, 1986; Bohart & Gressitt, 1951; Buxton, 1929; Senior-White et al., 1940), garbage (Wilton, 1961), in human faeces (Bohart & Gressitt, 1951; Ishijima, 1967; Trofimov, 1969), cow (Chin et al., 2010) and horse (Hardy, 1943) dung, rotten vegetable (*Cajanus indicus*) and cucumber (Lopes, 1958; Nandi, 2002; Senior-White et al., 1940). Larvae preferred breeding material in garbage dumps (Aloke et al., 1989). Maggots from human cadavers may provide important indications of the postmortem interval during forensic entomology investigations (Guo et al., 2010a, b, 2011; Mohamed Aly & Wen, 2013; Mohamed Aly et al., 2012, 2013a, b; Sukontason et al., 2014; Tan et al., 2010). They also caused facultative tissue myiasis in camel, bullocks, cows, goats (Alwar & Seshiah, 1958; Roy & Dasgupta, 1975; Sevgili et al., 2004b; Sinha et al., 2002). Several cases of human myiasis of wound (Senior-White et al., 1940) and eye (Nash, 2005) produced by larvae of this species are known. Maggots are facultative predators of freshwater snail *Indoplanorbis exustus* (Lomer et al., 1989; Parashar & Rao, 1989; Parashar et al., 1997) and land snail *Helix adspersa* (Povolný, 1987), pupae of lepidopteran hosts *Spodoptera litura* (Battu, 1977; Battu & Dilawari, 1978; Joshi et al., 1979), *Porthetria dispar* (Lehrer & Luciano, 1979), adult scarabaeid beetle *Polyphylla perversa* (Emden, 1950). This species reared in the laboratory on snails and chopped grasshoppers (Richet et al.,

2011). Adult flies are common in urban territories (Aloke et al., 1989), villages (Blackith & Blackith, 1988), gardens, sand beach, in mountains up to 1300 m a. s. l. (Kano et al., 1967; Kurahashi & Chaiwong, 2013; Lopes, 1958). Along sea shores this species seems to dominate the sarcophaginae associations and aggregations on small carcasses, especially fish, crustaceans and mollusks (Povolný & Verves, 1990). Such six different ecological habitats were selected for *L. dux*: botanical garden, lake-area, administration building, wetland, jungle fringes and housing areas (Nazni et al., 2007). Adults feed at dead fish (Aloke et al., 1989), flowers of *Bulbophyllum putidum*, *Tectona grandis*, and fallen fruits of *Dimocarpus longan*; larvivorous on human faeces and carrion (Bänziger & Pape, 2004). In India the corpses of *Bufo melanostictus* were infested after 20 hours postmortem; larvae develop 4-11 days, pupae - 8-15 days. Copulation took place on 5-7th day after hatching, and oviposition - after 7-13 days. The duration of imaginal life is 55-87 days, fertility - 50-81 larvae (Das & Dasgupta, 1986). This species has been found associated with the cause of amoebic dysentery, *Entamoeba histolytica* (Greenberg, 1971). Adult flies are carriers of nematodes *Habronema muscae* and *H. megastomum* (Hörning, 1959).

Material examined: Crimea: Bakhchysaray District: Beregove village, sandy area, 1.08.2004, 2 ♂; Lenino District: Kazan Tip State Reserve, 19-29.07.2007, 3 ♂ (Yu. Verves); Theodosia Municipal Government: Karadagh Natural Reserve, 10.07.2006, 1 ♂ (A. Drozdovska).

71. *Liosarcophaga* (s. str.) *emdeni* (Rohdendorf, 1969)

Distribution: Palaearctic: Europe: AL, AT, BG, CH, CZ (Bohemia and Moravia), DE, DK, EE, FI, FR (mainland), HR, HU, NO, PL, RO, RU (Bashkortostan, Ivanovo, Leningrad, Lipetsk, Moscow and Voronezh Regions), SE, SK, UA, UK; Asia: AM, AZ, CN (Xinjiang), GE, KZ, RU (Altai, Chechnya, Dagestan, Irkutsk, Kemerovo, Krasnoyarsk and Tuva Regions), TR. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetrovsk, Ivano-Frankivsk, Kherson, Khmelnytsky, Kyiv, Lviv, Mykoliyiv, Odesa, Poltava, Rivne, Ternopil, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae are necrophagous (Girfanova, 1958), bred in destroyed meat (Trofimov, 1969) and dead insects; facultative predators of lepidopteran pupae *Lymantria dispar* (Khitzova, 1967), *L. monacha* (Khitzova, 1968), parasitoids of terrestrial gastropods *Cepaea nemoralis* (Richet, 1990) and *Xerolenta obvia* (Verves & Kuzmovich, 1979). This species accompanies to lower elevations, both lowland forests, and xeric habitats and is obviously rather thermophilic (Povolný & Verves, 1990), sea shores, wastes (Emden, 1954), not rare in synanthropic conditions (Aradi & Mihályi, 1971). Adults feed on decaying meat, faeces, rotten fruits, flowers of different plants from families Apiaceae, Asteraceae, Euphorbiaceae (Verves & Kuzmovich, 1979), especially *Solidago canadensis* (Verves, 2013).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 20.05.2003, 1 ♂; ibid., sandy coast of Dnipro, 2.06.2003, 1 ♂; ibid., Zmiyini Is., Coast of Kaniv lake, 23.05.2003, 1 ♂. Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 8-11.08.1999, 4 ♂. Crimea: Bakhchysaray District: Beregove, loam sea shores, 23.08.1996, 1 ♂; ibid., sandy area, 7-8.08.2004, 3 ♂; Bakhchysaray City, stoned hill, 400 m a. s. l., 12.08.1996, 1 ♂; Lenino District: Qazan Tip State Reserve, 23-29.07.2007, 8 ♂ (Yu. Verves); Theodosia Municipal Government: Karadagh Natural Reserve, 2.07.2006, 2 ♂ (A. Drozdovska). Kherson Region: Gola Prystan District: Chornomorsky Biosphere Reserve, Rybalchanskiy branch, 28.05.1978, 1 ♂; Solenoozerny branch, 28.05.1978, 17-21.09.2003, & 28.07.2006, 6 ♂ (N. Berezovsky, Yu. Protzenko, Yu. Verves); Vinogradovo village, coast of Dnipro, 25.07.2006, 1 ♂. Kyiv City: Dnipro District: Hydropark, bushes, 16.06.2010, 1 ♂; Holosiiv District: Baykove Cemetery, 13.07. and 24.09.2003, 2 ♂; "Didorovsky" pond, humid banks, 28.08-5.09.1999, 2 ♂; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 2 ♂; Kozachy I. at Dnipro, 12 km S of centre of Kyiv, 9.09.2009, 2 ♂; National Exhibition Centre, bushes, 27.08.1999, 1 ♂; "Pyrogiv" field museum, 24.08.1999 & 28.05.2000, 10 ♂; "Theophania" park, 11.-19.06.2013, 4 ♂; Vasylkivska street 33, yard, 23.06. & 18.07.2008, 2 ♂; Vasylkivska street 98, yard, 15.05.-2.08.2002, 5 ♂; Williams street, dry meadows, 12-19.08.2002, 4 ♂. Obolon district: island on Dnipro, N 50°30'25", E 30°31'16", 16.06.2011, 1 ♂. Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000, 15.07.2005 & 27.09.2006, 8 ♂. Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 1 ♂. Kyiv Region: Obukhiv District: Velyki

Dmytroychi village, grass coast of stream, 4.07.1994, 8.09.1995, 27.06.1997 & 4.07.1999, 11 ♂ (Yu. Verves). Odesa Region: Ismail District: Suvorove village, 21.05.2003, 2 ♂ (Yu. Protzenko). Poltava Region: Pyryatyn District: Shkuratory village, locality "Ostriv", sandy road, 15.08.2010, 1 ♂. Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, meadow & beech forest, 98°33'N, 22°26'E, 140-200 m a. s. l., 16-23.08.2014, 10 ♂. Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 8 ♂ (Yu. Verves).

72. *Liosarcophaga (s. str.) harpax* (Pandellé, 1896)¹⁴

Distribution: Palaearctic: Europe: AT, BG, BY, CZ (Bohemia and Moravia), DE, FR (mainland), HR, HU, MD, PL, RO, RS, RU (Bashkortostan, Belgorod, Bryansk, Ivanovo, Jewish Autonomy, Kaliningrad, Leningrad, Moscow, Penza, Ryazan, Saratov and Voronezh Regions), SK, NL, UA; Asia: AZ, CN (Gansu, Jilin, Liaoning, Ningxia, Shaanxi, Shandong, Shanxi, Sichuan and Xinjiang), GE, JP (Hokkaido, Honshu, Kyushu and Shikoku), KZ, KP, KR, MN, RU (Altai, Amur, Buryatia, Chita, Dagestan, Khabarovsk, Novosibirsk, Primorye, Sakhalin, Tomsk and Tuva Regions), SA, TJ. Oriental: BD (Dacca), IN (Andra Pradesh, Bihar, Orissa, Uttar Pradesh, West Bengal), LK. UA: Cherkasy, Chernigiv, Chernivtsi, Ivano-Frankivsk, Kherson, Kyiv, Poltava and Zakarpattya Regions.

Larvae are bred from dead grasshoppers, fish, serpentes, birds, mammals (Artamonov, 1988; Kano et al., 1967; Nandi, 2002) and known as facultative predators of lepidopteran pupae *Aporia crataegi* (Artamonov, 1985), *Cosmotricha potatoria* (Zinovyev, 1962), *Dasychira albodentata* (Nakonechny et al., 1973; Zinovyev, 1962), *Dendrolimus pini* (Draber-Moňko, 1973; Entin, 1971; Khitzova, 1968; Shapiro, 1956; Sierpińska, 1998; Yarmanshevich, 1970), *D. sibiricus* (Kolomyietz, 1958, 1966; Zinovyev, 1962), *D. spectabilis* (Kano & Kokubo, 1962), *Dictyoploca japonica* (Artamonov, 1978), *Lymantria dispar* (Artamonov, 1985; Belov & Panina, 1985; Giranova, 1957, 1962; Khanislamov et al., 1958; Khitzova, 1967, 1968; Kolybin & Zelinskaya, 1971; Logoida, 1978; Parker, 1919; Ryvkin, 1958; Shapiro, 1956; Stepanova et al., 1977; Tabakovic-Tosic et al., 2013), *L. monacha* (Kolomyietz, 1958; Ryvkin, 1958), *Stilpnotia salicis* (Kolomyietz, 1966; Shapiro, 1956), able to predate another's fly maggots in animal carcasses (Povolný & Verves, 1997) and to produce human otomyiasis (Kaneko et al., 1968) and mammal tissue myiasis (James, 1947). The presence of maggots in human remains is important for forensic investigations (Kim et al., 2014). Females are larviposit on the surface of lepidopteran pupae or on leaves at distance to several millimeters from pupa (Artamonov, 1985). This culturophilous species accompanies forest stands up to their submontane elevations, bushes, gardens, synanthropic habitates (Povolný & Verves, 1990; Verves & Khrokalo, 2006). Flies are attracted to *Aristolochia ridcula* flowers and also to almost all decaying substances (Senior-White et al., 1940); feed at flowering plants, aphid excreta, rotten fruits, corpses and faeces (Verves & Khrokalo, 2006).

Material examined: Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 11.06. and 8-11.07.2000, 3 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 5-9.08.1999, 3 ♂. Kyiv City: Desna District: "Druzhby Narodiv" park, meadows nr lake, 8.07.2005, 1 ♂. Kyiv Region: Vysgorod District: Osishchyna village, meadows nr lake, 3.06.2007, 1 ♂ (Yu. Verves).

73. *Liosarcophaga (s. str.) jacobsoni* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: AL, BG, DE, DK, ES, FR (mainland and Corsica), GR, HR, HU, IE, IT (mainland and Sardinia), MD, MNE, RO, RS, RU (Bashkortostan and Voronezh Regions), SK, UA, UK; North Africa: DZ, ES (Canary Is. and Spanish North Africa), MA, PT (Azores); Asia: AM, AZ, CN (Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan and Xinjiang), CY, EG (Sinai), GE, IL, IR, KP, KR, KZ, MN, RU (Dagestan and Primorye Regions), SA, Tibet, TJ, TR, TM, UZ. UA: Cherkasy, Crimea, Dnipropetrovsk, Kharkiv, Kherson, Kirovograd, Kyiv, Mykolaiv, Odesa and Zaporizhzhya Regions.

¹⁴ Wangko et al. (2014) reported this species from Sulawesi, Indonesia. This record really is applied to *Liosarcophaga (s. str.) kohla* (Johnson et Hardy, 1923).

Larvae are bred from human and animal faeces, rarely from dead insects and vertebrates (Artamonov, 1987; Drensky, 1957; Gudjabilidze, 1970; Rohdendorf, 1937) and predatory of dipterous maggots in faeces (Povolný & Verves, 1990, 1997); bred from living snail *Cepaea nemoralis* (Richet, 1990); reared in laboratory conditions on freshly killed snails and chopped insects (Richet et al., 2011). Adult flies prefer dry steppe and sandy habitats, gardens and vegetable gardens, common in synanthropic conditions, where visiting flood markets (Aradi & Mihályi, 1971; Trofimov, 1969). Flies in settlements indoor up to 800 m o. s. l. (Vaschinskaya, 1959); are attracted to animal carcasses (Castillo Mirables, 2002), cattle dung and faeces (Martínez-Sánchez et al., 2000), aphid excreta, rotten fruits etc. (Verves & Khrokalo, 2006). In rectum and mid-gut of imago such patogenous organisms have been found: *Bodo caudata*; cysts of *Lamblia intestinalis*; vegetative cells of *Lamblia canis* and *Herpetomonas muscorum* (Trofimov & Engelhardt, 1965).

Material examined: Crimea: Lenino District: Qazan Tip State Reserve, 24-29.07.2007, 5 ♂. Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 1 ♂ Berdyansk City: sandy spit at Azov Sea, 14-17.08.1994, 1 ♂; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 10-26.08.1997, 41 ♂ (Yu. Verves).

74. *Liosarcophaga (s. str.) parkeri* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: AL, BG, CZ (Moravia), EE, ES, FR (mainland), HU, IT (mainland), MD, RO, RS, RU (Voronezh Region), SK, UA; North Africa: EG, PT (Azores); Asia: AM, AZ, CN (Gansu, Ningxia and Xinjiang), EG (Sinai), GE, IL, IR, KZ, PA, RU (Dagestan), SA, TJ, TM. Oriental: PK. UA: Cherkasy, Crimea, Dnipropetivsk, Donetsk, Kharkiv, Kherson, Kirovograd, Kyiv, Luhansk, Mykolaiv, Odesa, Poltava, Vinnytsia* and Zaporizhzhya Regions.

Larvae develop in dead insects, more often locusts, and vertebrates, especially small animal carcasses, pig and human faeces in natural localities (Drensky, 1957; Richet et al., 2011; Rohdendorf, 1937; Saloña-Bordas & Goñzales-Mora, 2005; Trofimov, 1965, 1969; Zakharova, 1961), and on pig kidney in laboratory conditions (Saloña-Bordas et al., 2007); known as facultative predators of others muscoid larvae in faeces (Richet et al., 2011), parasitoids of adults of tenebrionid beetle *Pisterotarsa gigantea zoubkoffi* and scarabaeid beetle *Scarabaeus sacer* (Charykuliev & Nepesova, 1972); caused cutaneous nyiasis in sheep (Trofimov, 1957). Imagoes prefer lowground xeric habitats. This termophilous species appears to be hemisynanthropic in steppe and hemidesert zones (Trofimov, 1965), common up to 2000 m o. s. l. (Syczewskaya, 1961). The flies visite flood markets (Aradi & Mihályi, 1971), animal carcasses, faeces and offal; hemisynanthropic species (Khoobdel et al., 2013; Povolný & Verves, 1990; Rohdendorf, 1959).

Material examined: Cherkasy Region: Uman City: "Sofiivka" dendrological park, 13-14.06.2006, 2 ♂. Crimea: Bakhchisaray District: Beregove village, sandy area, 24.08.2001, 1 ♂; ibid., 10.08.2004, 1 ♂; Lenino District: Qazan Tip State Reserve, 19-29.07.2007, 11 ♂. Kyiv City: Holosiiv District: "Didorovsky" pond, humid banks, 28.06.2004, 1 ♂; Dyky island on Dnipro, N 50°17'02", E 30°39'22" 6.10.2011, sandy area, 1 ♂, 1 ♀; "Sovky hole", coast of pond, humid meadow, 10.09.2000, 31.07.2002 & 29.08.2002, 3 ♂; Podil District: Shevchenko square, humid meadow nr pond, 15.07.2005, 1 ♂; Dnipro District: Rayduzny massive, bushes on bank of Malynivka Lake, 23.06.2005, 2 ♂; Obolon District: Moscow bridge, 2 km N, unnamed island on Dnipro, 27.06.2008, 1 ♂; unnamed island on Dnipro, N 50°30'25", E 30°31'16", 26.05., 16.06. & 22.09.2011, 19 ♂. Kyiv Region: Boryspil District: Rozhny village, bushes at coast of Dnipro, 16-18.08.1999, 6 ♂. Mykolaiv Region: Ochakiv District: Parutino village, bank of sea, 15-16.07.2006, 2 ♂. Poltava Region: Pyryatyn District: Keybalivka village, meadows at bank of Uday river, 18.08.2010, 3 ♂; Kharkivtzy village, 2 km S, locality "Velyki Solontzi", 13-14.07.09, 1 ♂. Vinnytsia Region: Chechelnyk District: "Karmelyuk's Podillya" National Nature Park, Lyubashivka village, 5.07.2013, 1 ♂ (V. Gorobchysyn). Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 23.08.1997 & 15.06.2008, 2 ♂; Artemivsk District: Kyrylivka village, spit "Fedotova", sandy area, 16.08.1997, 1 ♂; Berdyansk City, sandy spit at Azov Sea, 14-17.08.1994, 3 ♂; Melitopol City: "Kamyany Mogly" Reserve, at stones, 28.08.1997, 1 ♂; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 11-26.08.1997, 26 ♂; (Yu. Verves).

75. *Liosarcophaga* (s. str.) *portschinskyi* (Rohdendorf, 1937)

Distribution: Palaearctic: Europe: AD, AL, AT, BA, BE, BG, BY, CH, CZ (Moravia), DE, DK, EE, ES, FI, FR (mainland and Corsica), GR, HR, HU, IE, IT (mainland, Sardinia and Sicily), MD, MNE, MT, NL, NO, PL, PT, RO, RS, RU (Bashkortostan, Karelia, Leningrad, Moscow, Orenburg, Tambov and Voronezh Regions), SE, SK, UA, UK (England); North Africa: MA; Asia: AM, AZ, CN (Beijing, Gansu, Hebei, Heilongjiang, Henan, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shaanxi, Shandong, Shanghai, Shanxi, Xinjiang), GE, KZ, MN, RU (Chelyabinsk, Chita, Dagestan, Karachay-Cherkessia, Krasnodar, Primorye, Stavropol and Tuva Regions), Tibet, TJ, TM, TR, UZ. Oriental: CN (Yunnan), PK. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetrovsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Kirovograd, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Sumy, Volyn, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae are developed in carcasses of snails, fish, birds, animals, decaying meat, and faeces (Artamonov, 1987; Povolný & Verves, 1990, 1997; Zhang, 1982); known as facultative predators of lepidopteran pupae *Lymantria dispar* (Girganova, 1962; Kolybin & Zelinskaya, 1971; Tabakovic-Tosic et al., 2013), parasitoids of snail *Theba pisana* (Hopkins & Baker, 1993; Povolný & Verves, 1990), adult cerambycid beetle *Aegosoma scabicornis* and katydid grasshopper *Tettigonia viridissima* (Richet et al., 2011); bred from grass snake, *Natrix natrix* (Pape, 1987); in the laboratory reared on snails killed by lawnmower. Adults concentrate in the hotter, drier areas; also present in coastal or sandy areas with warm microclimates (Richet et al., 2011). This hemisynanthropic species is common in governments, farms, steppe, dry meadows, fields and forest borders at altitudes up to 1000 m a. s. l. (Gunárová & Slamečková, 1966; Khitzova, 1967; Trofimov, 1969; Verves, 1973; Verves & Khrokalo, 2006). Adult flies are attracted to decaying meat, bread, fruits, human excrement (Aradi & Mihályi, 1971), cattle dung and faeces (Martínez-Sánchez et al., 2000), piglet carcasses (Prado e Castro et al., 2010, 2011) etc.; feed on flowers of *Peucedanum oreoselinum* and *Sorbus aucularia* (Draber-Moňko, 1973).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 7.06.2003, 1 ♂ (Yu. Verves). Chernigiv Region: Borzna District: environs of Yadut village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 10.07.-24.08.2000, 32 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 4-13.08.1999, 55 ♂ (Yu. Verves). Crimea: Lenino District: Qazan Tip State Reserve, 26-28.07.2007, 3 ♂ (Yu. Verves). Kyiv City: Holosiiv District: Vasylkivska street 98, yard, 26.05.2002, 1 ♂; 10 km S of Kyiv City, Olzhyn I. at Dnipro, 16.09.2009, 1 ♂; Podil District: shores of lakes nr Shevchenko square, 27.09.2006, 1 ♂ (Yu. Verves). Kyiv Region: Boryspil District: environs of Rozhny village, bushes at coast of Dnipro, 15.08.1999, 2 ♂; Obukhiv District: environs of Velyki Dmytrovychi village, grass coast of stream, 8.09.1995, 3 ♂; 27.06.1997, 10 ♂; 3 km S of Tatzenky, 14.09.2003, at leaves and ground at border of pine forest nr lake, 2 ♂; 4 km W of Ukrainka City, 21.08.2004, at leaves and ground at border of pine forest nr lake, 1 ♂ (Yu. Verves). Rokytne District: Busheve village, N 49°39', E 30°35', open cast, 27.07.2012, 1 ♂ (Yu. Verves). Odesa Region: Ismail District: 5 km SE Kyslytza village, 7. and 9.08.2009, 1 ♂; Suvorove village, 20-23.08.2009, 1 ♂ (V. Corobchynshyn). Poltava Region: Grebinky District: environs of Marynivka village, 9.07.08, 1 ♂ (A. Drozdovska); environs of Grabarivka village, meadows near Ruda river, 15.07.2009, 5 ♂; Pyryatyn District: Shkuraty village, locality Ostriv, sandy road, 15.08.2010, 1 ♂ (Yu. Verves). Sumy Region: Romny City, banks of Romenka river, meadows and bushes, 21-27.08.2009, 11 ♂; dry meadows, at flowers of *Taraxacum officinale*, 5.05.2013, 5 ♂ (Yu. Verves). Zaporizhia Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, steppe, 23.08.1997, 1 ♂; meadows and bushes, 15.06.2008, 1 ♂; environs of Melitopol, "Kamyany Mogyl" Reserve, at stones, 28.08.1997, 2 ♂ (Yu. Verves).

76. *Liosarcophaga* (s. str.) *tuberosa* (Pandellé, 1896).

Distribution: Palaearctic: Europe: AT, BA, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, ES, FR (mainland and Corsica), GR, HR, HU, IT (mainland and Sardinia), MK, NL, PL, RO, RS, RU (Bashkortostan, Kursk, Leningrad, Moscow, Rostov, Saratov, Voronezh and Yaroslavl Regions), SE, SK, UA, UK; Asia: AZ, CN (Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Ningxia, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Xinjiang), GE, JP (Honshu and Kyushu), KG, KP,

KR, KZ, MN, RU (Altai, Amur, Chechnya, Dagestan, Khabarovsk, Novosibirsk, Primorye, Sakhalin, Tomsk, Tuva and Tyumen Regions), TJ, TM, TR, UZ. Oriental: CN (Guangxi and Guizhou), JP (Ryukyu Is.), PK (Utar Glacier), TW. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetrivsk, Kharkiv, Kherson, Kirovograd, Kyiv, Luhansk, Poltava, Sumy, Volyn and Zakarpattya Regions.

Larvae are developed in dead locusts, pork meat, corpse of jay (Artamonov, 1983); facultative predators of lepidopteran pupae *Dendrolimus pini* (Baer, 1921; Khitzova, 1968; Kramer, 1911; Sierpińska, 1998), *Lymantria dispar* (Čápek & Čepelák, 1970; Girfanova, 1957, 1962; Khanislamov et al., 1958; Khitzova, 1967; Logoida, 1978; Shapiro, 1956; Stepanova et al., 1977), *L. monacha* (Artamonov, 1985; Baer, 1921; Kramer, 1911), caused cutaneous myiasis of humans (James, 1947). The flies are attracted to corpses, faeces, rotten meat, flowers, ripe fruits, flood in open-air places, and aphid excreta (Aradi & Mihályi, 1971; Mihályi, 1966, 1969; Stackelberg, 1956; Verves & Khrokalo, 2006); prefers mesophilic and gyrophilic forests, borders of ponds and streames, accompanying especially warm deciduous, undistributed stands at lower elevations (Povolný & Verves, 1990, 1997; Verves, 2013).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 30 km N of Kaniv, 9.07.1988, 1 ♂; Kaniv State Nature Reserve, hombean forest, 2.08.1988, 1 ♂; yard, at vegetation, 20.05.2003, 1 ♂; Zmiyini Is., coast of Kaniv lake, 23.05.2003, 1 ♂ (Yu. Verves, S. Zrazhevsky). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 11.06.-24.08.2000, 18 ♂; Ichnya District: "Trostanetz" dendrological park, meadows and forest at lake coast, 5-13.08.1999, 27 ♂; Koryukivsky District: Gutyshche village, near pond, 3.07.2003, 1 ♂ (L. Khrokalo, Yu. Verves). Kyiv City: Desna District: "Lisova" subway-station, 5 km E, mixed forest and bushes near lake Lisove, 20.07.2004, 1 ♂; Dnipro District: "Hydropark" I. on Dnipro, Berizka lake, coast, at levees, 22.06.2006, 1 ♂; Holosiiv District: Baykove Cemetery, 7.08.2003, 1 ♂; "Didorovsky" pond, humid banks, 4.09.1999, 11.07-9.08.2002, 28.06.2004 & 12.09.2005, 16 ♂; Kozachy I. on Dnipro, 12 km S of Kyiv City, 9.09.2009, 1 ♂; Olzhyn I. at Dnipro, 10 km S of Kyiv City, 25.06., 8.07. & 16.09.2009, 7 ♂; "Prospect Nauki" avenue, "Lysa Gora" hills, bushes, 26.07.2002 & 8.05.2003, 2 ♂; "Sovky hole" coast of pond, humid meadow, 10.09.2000, 29.08.2002, 27.08.2004 & 9.06.2011, 6 ♂; "Theophania" park, 19.06. & 29.07.2013, 2 ♂; Vasylkivska street 33, yard, 31.07.2009, 1 ♂; Vasylkivska street 98, yard, 22.07.2002, 1 ♂; Williams street, dry meadows, 19.08.2002, 1 ♂; Obolon district: Moscow bridge, 2 km N, unnamed island on Dnipro, N 50°30'25", E 30°31'16", 26-30.05., 16.06., 29.08.2008 & 22.09.2011, 7 ♂; Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 1 ♂; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000 & 15.07.2005, 4 ♂. Kyiv Region: Bila Tserkva City: "Oleksandriya" park, 3.05.2009, 1 ♂; Boryspil District: Rozhny village, bushes at coast of Dnipro, 16-22.08.1999, 15 ♂; Brovary District: Zazymya village, 5 km N, meadows near Desna, 1.08.2001, 20 ♂; Kyiv-Svyatoshyn District: Gostomel village, 4 km N, meadows at right bank of Irpin river, 8.07.2001, 7 ♂; Zhukiv Island 20 km S of Kyiv, 9.09.2002, 1 ♂; Obukhiv District: Velyki Dmytroychi village, grass coast of stream, 4.07.1994, 27.06.1997 & 4.07.1999, 3 ♂; Ukrainka City, dry meadow and bushes, 14.09.2003, 1 ♂ (Yu. Verves). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13-15.08.2010, 2 ♂; Pyryatyn District: Bilotserkivtsi village, locality "Murentzeve", 15.08.2010, 2 ♂; Grabarivka village, meadows nr Ruda river, 15.07.2009, 13 ♂; Keybalivka village, meadows near Uday river, 17.07.2009 & 18.08.2010, 5 ♂; Kharkivtsi village, 2 km S, locality "Velyki Solontzi", 13-14.07.09, 1 ♂; Lelyaky village, meadows at bank of Uday river, 12. & 16.08.2010, 6 ♂; Masalske village, meadows nr Uday river, 14.08.2010, 10 ♂; (O. Tkachenko, Yu. Verves). Sumy Region: Romny City: banks of Romenka river, meadows and bushes, 21-27.08.2009, 19 ♂ (Yu. Verves).

77. *Liosarcophaga (Pandelleisca) similis* (Meade, 1876)

Distribution: Palaearctic: Europe: AL, AT, BA, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, FI, FR (mainland), HR, HU, IT (mainland), LV, MD, MNE, NL, NO, PL, PT, RO, RS, RU (Bashkortostan, Ivanovo, Karelia, Leningrad, Moscow, Murmansk and Voronezh Regions), SE, SK, UA, UK; North Africa: PT (Azores); Asia: AZ, CN (Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Shaanxi, Shandong, Shanghai, Shanxi and Sichuan), GE, IR, JP (Hokkaido, Honshu, Kyushu and Shikoku), RU (Altai, Amur, Chechnya, Dagestan, Ingushetia, Khabarovsk, Kola Peninsula, Krasnodar, Kurily, Primorye, Sakhalin, Stavropol, Tomsk

and Tuva Regions), TR. Oriental: CN (Fujian, Guangdong, Guangxi, Guizhou, Hainan I., Hunan, Jiangxi, Yunnan, Zhejiang). UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Ivano-Frankivsk, Kharkiv, Kherson, Kirovograd, Kyiv, Lviv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae breed on dead insects, snails and vertebrates, including humans, rotten meat, garbage, bird and mammalian faeces (Artamonov, 1983; Jamagishi et al., 2003; Kano et al., 1967; Kirchberg, 1951; Okadome et al., 2002; Park, 1977; Rohdendorf, 1937; Verves & Khokalo, 2006; Zakharova, 1961, 1965); known as parasitoids of succineid snails (Artamonov, 1983), predators of lepidopteran pupae *Dendrolimus pini* (Draber-Moňko, 1995), *D. spectabilis* (Kano & Kokubo, 1962), *Lymantria dispar* (Girfanova, 1958), *L. monachae* (Draber-Moňko, 1995), *Mamestra oleracea* (Povolný & Verves, 1990). Occasionally maggots colonize dead humans and have some importance as forensic indicators (Cherix et al., 2012; Guo et al., 2010b, 2011). This species reared in the laboratory on beef (Richet et al., 2011). Maggots produced facultative human aural (Chigusa et al., 1994; Hatsuchika et al., 1988, 2002; Yoneda & Iwami, 1981), cutaneous (James, 1947; Kano, 1962) and accidental intestinal (Ito & Koshimizu, 1955; Yoneda et al., 1998) myiasis. Hemisynthropic species; adult flies are common in humid and mesophilic forest habitats, lowland marshes and human dwellings (Feng et al., 1990; Gunárová & Slamečková, 1967; Kano et al., 1967; Mitsui, 1996, 2002; Stackelberg, 1956). This species was found to be an indicator for urban habitats (Fremdt & Amendt, 2014). Flies were collected at altitudes up to 1000 m o. s. l. (Trofimov, 1969). Imago feed at dead mollusks and different vertebrates, sweat of man, mucous secrets from mouth and nose of hoof animals, aphid excreta (Artamonov, 1992, 1993; Povolný & Verves, 1990, 1997; Prado e Castro et al., 2010) and flowers of *Angelica silvestris*, *Pastinaca sativa*, *Thymus serpillum* (Draber-Moňko, 1973), *Stapelia grandiflora* (Hori, 1967), *Solidago canadensis* (Verves, 2013).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, 19.08.1988, 1 ♂; (S. Zrazhevsky); Zarichchya I., 30.07.1968, 2 ♂ (O. Viktorov-Nabokov); Keleberda village, humid forest near pond, 20.05.2002, 1 ♂; Uman City: "Sofiivka" dendrological park, 11.06.2005, 1 ♂. Chernigiv Region: Borzna District: Makoshyno village, meadows, 20.08.2000, 2 ♂; Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 11.06.-24.08.2000, 23 ♂; Ichnya District: "Trostyanetz" Dendrological Park, meadows and forest at Lake coast, 6-7.08.1999, 7 ♂. Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, meadows along Samara River, 1.08.2000, 3 ♂; border of oak forest near lake, 2.08.2000, 1 ♂; humid meadow, at flowers of *Heracleum* sp., 5.08.2000, 2 ♂; feather grass steppe, 11.08.2000, 1 ♂ (Yu. Verves); bred from dead mouses, no further data, 2 ♂, 1 ♀ (M. Shulman). Kyiv City: Desna District: "Druzhby Narodiv" Park, meadows nr Lake, 8.07.2005, 2 ♂; "Lisova" subway-station, 5 km E, mixed forest and bushes near Lake Lisove, 20.07.2004, 3 ♂; Dnipro District, Hydropark, bushes nr Berizka Lake, 16.06., 22.06. and 20.09.2010, 6 ♂; Rayduzny Massive, bushes on bank of Malynivka Lake, 23.06.2005, 1 ♂; Trukhaniv I., shores of Babyne Lake, 12.08.2007, 2 ♂; Holosiiv District, Baykove Cemetery, 13.07.-7.08.2003 and 16.08.2004, 7 ♂; "Didorovsky" pond, humid banks, 25.08-4.09.1999, 11.07-9.08.2002, 21.09.2003, 28.06.2004 and 12.09.2005, 26 ♂; Dyky island at Dnipro, sandy area, N 50°17'02", E 30°39'22" 2 ♂, 1 ♀; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 1 ♂; National Exhibition Centre, busches, 27.08.1999 and 26.05.2002, 4 ♂; Pyrogiv village, field Museum, 24.08.1999, 1 ♂; "Sovky hole", humid meadow, 10.09.2000, 30-31.07., 29.08.2002, 27.06., 16.07.2003 & 3.05., 27.08.2004, 43 ♂; "Theophania" park, 19.06.2013 & 8.09.2014, 2 ♂ (Yu. Verves); Uralska street, 3-6.07.2009, 2 ♂ (A. Drozdovska); Vasylkivska street 33, yard, 7-27.07.2008, 27.05.2010, 31.05., 2.06. & 7.06.2010, 9 ♂; Vasylkivska street 98, yard, 15.05.-1.09.2002, 28 ♂; Williams street, dry meadows, 19.08.2002, 1 ♂; Pechersk District, Kyiv-Pechersk Lavra, bushes, 21.05.2009, 2 ♂; Obolon District, 2 km N of Moscow bridge, unnamed island on Dnipro, 27.06. & 29.08.2008, 2 ♂; Shevchenko square, humid meadow nr pond, 3-4.06.2000 and 15.07.2005, 8 ♂; unnamed island, N 50°30'25", E 30°31'16", 26.05., 16.06. & 22.09.2011, 5 ♂; Verbne Lake 31.08.2004, 1 ♂. Kyiv Region: Bila Tserkva City, "Oleksandria" Dendrological Park, 3.05.2009, 1 ♂; Boryspil District, Rozhny village, bushes, 15-21.08.1999, 10 ♂; Brovary District, Zazymya village, meadows, 1.08.2001, 2 ♂; Obukhiv District: Ukrainka City, dry meadow and bushes, 14.09.2003, 1 ♂; Vyshgorod District: 20 km N of dam, left coast of Kyiv reservoir, sandy area and bushes, 5.8.2001, 2 ♂. Poltava Region: Pyryatyn District, Grabarivka village, meadows nr

Ruda River, 15.07.2009, 1 ♂; Lelyaky village, meadows at bank of Uday River, 16.08.2010, 1 ♂ (Yu. Verves). Sumy Region: Serednya Buda District, Desnyansko-Starogutsky National Nature Park, 8.07.2008, 1 ♂ (Yu. Protzenko); Romny City, banks of Romenka River, meadows and bushes, 21-27.08.2009, 10 ♂ (Yu. Verves); Vakolovshchyna village, humid meadow, 18-31.05.2006, 1 ♂ (O. Govorun). Zakarpattya Region: Mizhgirrya District, 2-4 km S of Kolochava village, along Tereblya River, 500 m a. s. l., humid meadows, 12.08.1995, 1 ♂. Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140-150 m a. s. l., 16-23.08.2014, 4 ♂. Zaporizzhya Region: Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 1 ♂ (Yu. Verves).

78. *Parasarcophaga* (s. str.) *albiceps* (Meigen, 1826)

Distribution: Palaearctic: Europe: AL, AT, BA, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, ES, FI, FR (mainland); GR, HR, HU, IT (mainland and Sicily), LV, MD, MNE, NL, NO, PL, PT, RO, RS, RU (Bashkortostan, Ivanovo, Karelia, Kirov, Leningrad, Moscow, Vologda and Voronezh Regions), SE, SK, UA, UK; North Africa: DZ, EG; Asia: AM, AZ, CN (Gansu, Hebei, Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Shaanxi, Shandong, Shanghai, Shanxi and Sichuan), EG (Sinai), GE, IL, JP (Hokkaido, Honshu, Kyushu and Shikoku), KP, KR, KZ, RU (Alania, Altai, Amur, Buryatia, Chechnya, Chita, Dagestan, Irkutsk, Karachay-Cherkessia, Kemerovo, Khabarovsk, Khakassia, Krasnodar, Krasnoyarsk, Kurily Is., Novosibirsk, Omsk, Sakhalin I., Tomsk, Tuva and Yakutia Regions), Tibet, TR. Afrotropical: KE. Oriental: BD, BT, CN (Fujian, Guangdong, Guangxi, Guizhou, Hainan I., Hunan, Jiangxi, Yunnan and Zhejiang); ID (Flores Is., Java, Kalimantan, Lombok, Sulawesi, Sumatra, Sumba and Timor), IN (Andaman Is., Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh, Dādra and Nagar Haveli, Dāmān and Diu, Delhi, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Laccadive Is., Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Nicobar Is., Orissa, Pondicherry, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttar Pradesh and West Bengal), JP (Amami Is. and Ryukyu Is.), LK, MM, MY (Kuala Lumpur, Pahang, Penang, Perak, Sarawak, Selangor), PH (Balabac, Palawan and Tawi Tawi), PK (North-West Frontier and Punjab), SG, TH, TW, VN. Australasian/Oceanian: AU (Queensland), US (Hawaii: Hawaii, Kauai, Maui, Molokai, Oahu), ID (Irian Jaya, Maluku), PG (Bismarck Is., New Guinea), SB (Guadalcanal). UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Lviv, Mykolaiv, Odesa, Poltava, Sumy, Vinnytsia, Volyn, Zhytomyr, Zakarpattya, Zaporizzhya and Zhytomyr Regions.

Hemisynthropic species (Stackelberg, 1956). Larvae breed from human and bovine faeces, dung, dead insects, snails, vertebrates, human corpses and decaying meat (Artamonov, 1983; Blackith & Blackith, 1988; Girfanova, 1962; Ishijima, 1967; Kühlhorn, 1986; Rohdendorf, 1959; Senior-White et al., 1940; Stackelberg, 1956; Shazia et al., 2006), garbage dumps (Aloke et al., 1989), facultative predators or parasitoids of lepidopteran pupae *Aporia crataegi* (Blunck & Wilbert, 1962; Fedotova, 1950; Vasilyev, 1902), *Dasychira albodentata* (Nakonechny et al., 1973), *Dendrolimus albolineatus* (Povolný & Verves, 1990), *D. pini*, *D. segregatus*, *D. sibiricus* (Baer, 1921; Kazanskij, 1927; Kolomyietz, 1952; Vasilyev, 1913), *Lymantria dispar* (Nakonechny, 1973a), *L. monacha* (Baer, 1921; Nakonechny, 1973b), *Nomagria* sp., *Orgya antiqua*, *Selenephera lunigera* (Nakonechny, 1973a); larvae of tenthredopid *Acantholyda posticalis* (Lee, 1963) and cerambycid beetle *Saperda populnea* (Kleine, 1910); adult scarabaeid beetles *Melolontha* sp., *Oryctes nasicornis*, *Polyphylla fullo* (Baer, 1921); reared in the laboratory on beef (Richet et al., 2011). This species is used as forensic indicator (Guo et al., 2010a, b, 2011; Mohamed Aly & Wen, 2013; Mohamed Aly et al., 2013a, b; Tan et al., 2010). The maggots are involved in cases of cutaneous myiasis of buffalo, cows and humans (Castro et al., 2010; James, 1947; Sucharit et al., 1976). Adults are common in flood markets (Aloke et al., 1989; Aradi & Mihályi, 1971) and other settlement habitats, in forest coenoses, the most frequently in forest-steppes and oak forests (Artamonov, 1985), in limestone gorges, coastal dunes, floodplains, meadows and wooded areas (Richet et al., 2011); collected at altitudes up to 1500-2000 m o. s. l. (Feng, 2006; Kano et al., 1999; Rohdendorf, 1966). This species was found to be an indicator for rural habitats (Fremdt & Amendt, 2014). Flies has been observed to larviposit on mutton (Singh & Bharti, 2008) and are frequent visitors of faeces, decaying meat, human sweat (Artamonov, 1988; Povolný & Verves, 1997; Stackelberg, 1956), flowers of *Anethum graveolens*, *Solidago canadensis* (Verves, 2003), *Angelica*

sp., *Pastinaca* sp. (Séguy, 1941), *Circium arvense*, *Peucedanum oreoselinum*, *Prunus spinosa* (Draber-Mońko, 1973), *Bulbophyllum putidum*, *Sapria pan* and fallen fruits of *Dimocarpus longan*; females larviposit exclusively on faeces, not on carrion (Bänziger & Pape, 2004).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 3. & 7.06.2003, 2 ♂ 10.06.2006, 1 ♂; Krugly I., 16.08.1986, 2 ♂; Zmiyini Is., coast of Kaniv lake, 23.05.2003, 1 ♂ (A. Drozdovska, Yu. Verves, S. Zrazhewsky); Uman City: "Sofiivka" dendrological park 11.06.2005 & 13-14.06.2006, 3 ♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 8-12.07.2000, 10 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 5-8.08.1999, 2 ♂ (Yu. Verves). Kirovograd Region: Znamenska City: forest road, on faeces, 19.07.1962, 2 ♂ (O. Viktorov-Nabokov). Kyiv City: Desna District, "Druzhby Narodiv" park, meadows nr Lake, 8.07.2005, 1 ♂; "Lisova" subway-station, 5 km E, mixed forest and bushes near Lake Lisove, 20.07.2004, 7 ♂; Dnipro District: Hydropark, banks of Berizka Lake, bushes, 22.06.2006 & 16.06.2010, 6 ♂; Rayduzny Massive, bushes on bank of Malynivka Lake, 23.06.2005, 2 ♂; Holosiiv District: Baykove Cemetery, 16.08.2004, 1 ♂ (Yu. Verves); "Didorovsky" pond, humid banks, 11.07-9.08.2002, 21.09.2003 & 28.06.2004, 12 ♂ (A. Drozdovska, Yu. Verves); Dyky I. at Dnipro, sandy area, N 50°17'02", E 30°39'22", 30.06.2011, 2 ♂; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 1 ♂; Kozacha street, on leaves and walls of buildings, 7.07.2005, 9 ♂; National Exhibition Centre, busches, 27.08.1999, 3 ♂; Olzhyn I. at Dnipro, 10 km S of Kharkiv Bridge, 8.07. and 16.09.2009, 9 ♂; "Sovky hole", meadows nr ponds, 3-4.06.2000, 30.07.- 29.08.2002, 27.06.-16.07.2003, 15.07.2005.06.2011, 41 ♂ (Yu. Verves); Uralska street, yard, 3-6.07.2009, 3 ♂ (A. Drozdovska); "Theophania" park, 19.06.2013, 2 ♂; Vasylkivska street 33, yard, 25.06.2008, 28.05.- 26. 06.2009, 27.05., 7.06., 7.07. & 28.07.2010, 13 ♂; Vasylkivska street 98, yard, 9.05.-17.08.2002, 34 ♂; Williams street, dry meadows, 19.08.2002, 2 ♂; Obolon District: Shevchenko square, humid meadow nr pond, 3-4.06.2000, 15.07.2005 and 27.09.2006, 7 ♂; unnamed island on Dnipro, N 50°30'25", E 30°31'16", 30.05.2008, 26.05., 16.06. & 22.09.2011, 9 ♂; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 2 ♂; Kyiv Region: Boryspil District, Rozhny village, bushes, 15-18.08.1999, 2 ♂; Kyiv-Svyatoshyn District: Irpin City, 2-4 km E, forest nr bog, 26.04.2003, 1 ♂. Poltava Region: Pyryatyn District: Grabarivka village, meadows nr Ruda River, 15.07.2009, 1 ♂; Lelyaky village, meadows at bank of Uday River, 16.08.2010, 1 ♂. Sumy Region: Trostyanetz City, meadows, 3.08.1999, 1 ♂. Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 160 m a. s. l., 18.08.2014, 1 ♂. Zaporizhzhya Region: Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 3 ♂ (Yu. Verves).

79. *Robineauella (Digitiventra) pseudoscoparia* (Kramer, 1911)

Distribution: Holarctic: Europe: AT, CH, CZ (Moravia), DE, HU, IT (mainland), NL, PL, RO, RU (Bashkortostan, Leningrad, Moscow, Nizhny Novgorod, Orenburg, Perm and Voronezh Regions), SK, UA; Asia: CN (Hebei, Heilongjiang, Jilin, Liaoning, Shaanxi), JP (Hokkaido), KR, MN, RU (Altai, Amur, Chita, Khabarovsk, Magadan, Primorye, Sakhalin and Tuva Regions); North America: US (no more detailed data; probably introduced). Oriental: TH. UA: Kyiv Region¹⁵.

Larvae are bred from dead insects and vertebrates (Artamonov, 1983, 1988); known as facultative predators of lepidopteran pupae of *Aporia crataegi* (Kolomyietz, 1958), *Cosmotricha potatoria* (Artamonov, 1985; Zinov'yev, 1962), *Dasychira albodentata* (Ivliev & Sinchylina, 1962; Nakonechny, 1973a; Zinov'yev, 1962), *Dendrolimus pini* (Verves & Khrokalo, 2006), *D. sibiricus* (Boldaruev, 1952; Kolomyietz, 1952, 1958; Orlov & Yurchenko, 1978; Zinov'yev, 1962), *Lymantria dispar* (Artamonov, 1985, 1988; Coulson et al., 1986; Girfanova, 1957, 1962; Khanislamov et al., 1958; Kolomyietz, 1958, 1966; Nakonechny, 1973a; Skufyin & Khitzova, 1967), *L. monacha* (Kolomyietz, 1958; Kramer, 1911, 1917; Nakonechny, 1973b), *Malacosoma neustria* (Verves & Khrokalo, 2006), *Orgyia antiqua*, *Selenephera lunigera* (Nakonechny, 1973a). Flies at forest borders, in bushes, parks and gardens (Artamonov, 1988; Povolný & Verves, 1997; Verves & Khrokalo, 2006); in mountains at altitudes up to 1600 m a. s. l. (Kurahashi & Chaiwong, 2013). Imagoes feed at cadavers, faeces, flowering plants, aphid excreta (Artamonov, 1988; Verves & Khrokalo, 2006).

¹⁵ based on a single data (Bilanovsky, 1931).

80. *Robineauella (s. str.) caerulescens* (Zetterstedt, 1838)

Distribution: Holarctic: Europe: AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland), HR, HU, IT (mainland and Sicily), LT, LV, NO, PL, RO, RS, RU (Bashkortostan, Ivanovo, Kaliningrad, Karelia, Kirov, Kursk, Leningrad, Moscow, Murmansk, Orenburg, Perm and Voronezh Regions), SE, SI, SK, UA, UK; Asia: AM, AZ, CN (Jilin, Sichuan, Xinjiang), GE, JP (Honshu), KG, Korean Peninsula, KZ, MN, RU (Altai, Amur, Buryatia, Chita, Chukotka, Irkutsk, Jevish Authority, Kamchatka, Karachay-Cherkessia, Kemerovo, Khabarovsk, Koryak Authority, Krasnodar, Krasnoyarsk, Kuril Is., Magadan, Primorye, Sakhalin, Stavropol, Tomsk, Tuva and Yakutia Regions), Tibet, TJ. North America: CA (Yukon Territory), US (Alaska). Oriental: CN (Yunnan). UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk*, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Lviv, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhia and Zhytomyr Regions.

Larvae develop in dead or dying snails, insects and in carcasses of small mammals, birds, amphibian and fish (Artamonov, 1988; Groth & Reissmueller, 1973; Kolomyietz, 1966; Kühlhorn, 1986; Povolný & Verves, 1990; Rohdendorf & Grunin, 1938; Verves & Khrokalo, 2006) and facultative predators on lepidopteran pupae of *Lymantria dispar* (Girfanova, 1958), *L. monacha* (Čepelák, 1956; Girfanova, 1962; Séguay, 1941). Occasionally maggots colonize dead humans and have some importance as forensic indicators (Cherix et al., 2012). Their laboratory rearing is easy on meat (especially on liver), because young maggots kill other competing larvae on most substrates exposed to oviposition in nature (Hanski, 1987; Richet et al., 2011). Adult flies prefer semi-chaded forested or bushy formations in lowland and montane elevations up to the timberline (2100-2500 m a. s. l.) (Povolný & Verves, 1997; Richet et al., 2011; Sychevskaya & Vtorov, 1970; Ziegler & Lange, 2001). This species was found to be an indicator for rural habitats (Fremdt & Amendt, 2014). Flies feed at flowers and visit decaying organic substrates: corpses, faeces, rotten fruits, aphid excreta (Povolný & Verves, 1990, 1997; Sychevskaya, 1966).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 10.06.2006, 1 ♂ (A. Drozdovska); Uman City, "Sofiivka" Dendrological Park, 11.06.2005, 1 ♀. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 24.08.2000, 1 ♂; Ichnya District: "Trostanets" Dendrological Park, meadows and forest at Lake coast, 5-12.08.1999, 5 ♂. Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, bred from dead mouses, no further data, 2 ♂, 1 ♀ (M. Shulman); Kyiv City: Dnipro District: Hydropark, sandy bank of Berizka Lake, 20.09.2006, 1 ♀ (Yu. Verves). Holosiiv District: "Didorovsky" pond, humid meadow, 21.09.2003, 1 ♀ (A. Drozdovska); "Theophania" park, 19.06.2013 & 8.09.2014, 1 ♂, 1 ♀; Vasylkivska street 98, yard, 26.05.2002, 1 ♂; Williams street, dry meadows, 28.07.2001, 1 ♂ (Yu. Verves). Kyiv Region: Vysjgorod District: Lyutizh village, 25.02.2012, 1 ♀ (L. Frantzevich). Poltava Region: Grebinky District: Marynivka village, 9.07.08, 1 ♀ (A. Drozdovska); Pyryatyn District: Keybalivka village, meadows at bank of Uday river, 11.07.2009, 1 ♀ (V. Gorobchynshyn). Sumy Region: Romny City, banks of Romenka River, meadows and bushes, 27.08.2009, 1 ♂. Vinnytsia Region: Chechelnyk District: Chechelnyk Sity, 4,5 km S, "Karmelyuk's Podillya" National Nature Park, "Vyshenke" locality, 26-27.05.2014, 2 ♂, 1 ♀ (V. Gorobchynshyn). Zakarpattya Region: Mizhgirrya District: Kolochava village, along Kvasonetz stream, 600 m a. s. l., stones, 12.08.1995, 1 ♂; along Tereblya River, 500 m a. s. l., humid meadows, 12.08.1995, 1 ♂; Uzhgorod District: Nyzhne Solotvyno village, tip of hill, beech forest, 98°33'N, 22°26'E, 200 m a. s. l., 22.08.2014, 1 ♂ (Yu. Verves).

Subtribe Sarcophagina**81. *Sarcophaga bachmayeri* Lehrer, 1978**

Distribution: Palaearctic: Europe: AT, HU, SK, UA: Zakarpattya Region.

This species accompanies borders of mountain forests preferring elevations 800-1200 m a. s. l. (Povolný, 1997, 2000; Povolný & Verves, 1997). Flying period from end of April to end of September (original data).

Material examined: Zakarpattyia Region: Perechyn District: Turyi Remety village, 15.05.1965, 3 ♂; Rakhiv City, 27.05.1965, 2 ♂ (O. Viktorov-Nabokov); Velyko-Berezny City, 22.07.1964, 1 ♂ (L. Zimina).

Slovakia: Bojnice, nr bog, 15. & 19.08.1957, 5.08.1961, 3 ♂; Homôlka, 14.07.1967, 1 ♂; Jankov víšok, 30.04.1957, 6 ♂; Šútovce, 27.09.1957, 2 ♂ (J. Čepelák, V. Gunárová, M. Slamečková).

82. *Sarcophaga baraschi* Lehrer, 1977*

Distribution: Europe: HU, RO, SK, UA: Dnipropetivsk Region. This species firstly recorded for Ukraine¹⁶.

Common at dry meadows and in feather-grass steppe at the bottom and slopes of ravine (Verves, 2000).

Material examined: Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, bottom of steppe ravine, 4-15.06.2008, 12 ♂ (Yu. Verves).

83. *Sarcophaga bergi* Rohdendorf, 1937

Distribution: Palaearctic: Europe: BG, RS, UA; Asia: GE, IL, JO, SY, TR. UA: Crimea.

Stenoecious and thermophile form (Povolný & Verves, 1990).

Material examined: Crimea: Alushta City: bank of sea, stones, 20.08.1976, 3 ♂ (Yu. Verves).

84. *Sarcophaga carnaria* (Linnaeus, 1758)

Distribution: Palaearctic: Europe: AT, BG, BE, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, FI, FR (mainland), HR, HU, IE, IT (mainland, Sardinia and Sicily), LT, LU, LV, MD, MT, NO, PL, RO, RU (Bashkortostan, Ivanovo, Karelia, Kursk, Leningrad, Lipetsk, Moscow, Voronezh and Yaroslavl Regions), SE, SK, UA, UK (England); Asia: AM, AZ, EG (Sinai), GE, IL, KZ, RU (Altai, Chechnya, Igushtia, Irkutsk, Kabardi-Balkaria, Karachay-Cherkessia, Krasnodar, North Osetia, Novosibirsk, Stavropol and Tomsk Regions), SY, TR. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Vinnytsia*, Volyn, Zakarpattyia, Zaporizhzhya and Zhytomyr Regions.

Larvae are essentially parasitoids of earthworms (Eberhard, 1955; Grunin, 1964; Kirchberg, 1954, 1961; Viktorov-Nabokov & Verves, 1975); females larviposited on freshworm casts; this species is not developed in invertebrate and vertebrate corpses (Blackith et al., 1994). Flies feed at corpses, faeces, aphid excreta, rotten fruits (Sevgili et al., 2004b; Verves & Khrokalo, 2006), flowers of *Anethum graveolens*, *Heracleum sibiricum*, *Solidago canadensis* (Verves, 2003). This species prefers the vicinity of humid forests or sometimes the forest interior, meadows, borders of roads, parks and gardens (Povolný & Verves, 1997; Verves & Khrokalo, 2006) up to 2500 m a. s. l. (Ziegler & Lange, 2001).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, at vegetation, 20.05. and 3.06.2003, 3 ♂; Uman District: "Sofiivka" Dendrological Park, 11.06.2005 & 13-14.06.2006, 13 ♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 11.07. & 24.08.2000, 2 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 4-13.08.1999, 19 ♂. Crimea: Bakhchysaray District: Beregove village, sandy area, 1.08.2004 (Yu. Verves), 1 ♂; Theodosia Municipal Government: Karadagh Natural State Reserve, 3.07.2006, 1 ♂ (A. Drozdovska). Kyiv City: Dnipro District: Hydropark, bushes nr Berizka Lake, 22.06.2006 & 16.06.2010, 7 ♂; Rayduzny Massive, bushes on bank of Malynivka Lake, 23.06.2005, 1 ♂; Holosiiv District: Baykove Cemetery, 13.07., 24.09.2003 & 16.08.2004, 17 ♂; Chervonozoryany avenue 126, wall of building, 15.07.2011, 1 ♂; "Didorovsky" pond, humid banks, 25.08-5.09.1999, 11.07-9.08.2002, 21.09.2003 & 28.06.2004, 30 ♂; Dyky I. at Dnipro, N 50°17'02", E 30°39'22", sandy area, 6.10.2011, 1 ♀; "Holosiiv" Park in memory M. Rylsky, 10.06.2009, 4 ♂; Kozacha street, on leaves and walls of buildings, 7.07.2005, 5 ♂; National Exhibition Centre, busches, 27.08.1999 and 26.05.2002, 7 ♂; Olzhyn I. at Dnipro, 10 km S of Kharkiv Bridge, 16.09.2009, 1 ♂ (Yu. Verves); "Prospekt Nauki"

¹⁶ Verves (1998) mixed this species with "*Sarcophaga ukrainica* Rohd."

avenue, hills "Lysa Gora", bushes, 8.05.2003 & 19.08.2004, 18 ♂ (A. Drozdovska, Yu. Verves); "Sovky hole", coast of pond, humid meadows, 10.09.2000, 30-31.07. & 29.08.2002, 27.06., 16.07. and 1.08.2003, 3.05. & 27.08.2004, 9.06.2011, 35 ♂; "Theophania" Park, 11.06.-29.07.2013 & 8.09.2014, 10 ♂ (Yu. Verves); Uralska street, yard, 3-6.07.2009, 2 ♂ (A. Drozdovska); Vasylkivska street 33, yard, 25.06.-8.08.2008, 28.05.-2.09.2009, 27.05.2010, 31.05.- 29.06.2010, 58 ♂; Vasylkivska street 98, yard, 29.04.-6.09.2002, 163 ♂; indoor of laboratory building, on windows, 28.10.2002, 3 ♂; Williams street, dry meadows, 10-28.07.2001 and 25.04.-19.08.2002, 32 ♂; Pechersk District: Kyiv-Pechersk Lavra, bushes, 21.05.2009, 3 ♂; Obolon District: Moscow Bridge, 2 km N, unnamed island on Dnipro, 30.05.2008, 2 ♂; Shevchenko square, 5 ♂; Podil District: Shevchenko square, humid meadow nr pond, 15.07.2005 & 27.09.2006, 24 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-28.8.2003, 38 ♂. Kyiv Region: Bila Tzerkva City: "Oleksandria" Dendrological Park, 3.05.2009, 3 ♂; Boryspil District: Rozhny village, bushes, 16.08.1999, 1 ♂; Brovary District: Zazymya village, meadows, 1.08.2001, 1 ♂. Kyiv-Sviatoshyn District: Hostomel village, 4 km N, meadows at right bank of Irpin River, 8.07.2001, 1 ♂; Irpin City, forest nr bog, 26.04.2003, 2 ♂; Obukhiv District: Velyki Dmytryovychi village, grass coast of stream, 2.05.1999, 1 ♂; Tatzenky village, 14.09.2003, at ground at border of pine forest, 2 ♂; Ukrainka City: at ground at border of pine forest, 21.08.2004, 1 ♂. Poltava Region: Pyryatyn District: Davydivka village, meadows, 15.07.2009, 4 ♂ (Yu. Verves); Gurbintsi village, on flowering *Apiaceae*, 18-23.07.2005, 6 ♂ (A. Drozdovska); Keybalivka village, meadows near Uday River, 11-18.07.2009, 4 ♂. Sumy Region: Romny City: banks of Romenka River, meadows and bushes, 21-27.08.2009, 11 ♂ (Yu. Verves); Sumy District: Vakolovshchyna village, humid meadow, 18-31.05.2006 and 5-14.06.2007, 4 ♂ (O. Govorun). Ternopil Region: Zaleschyky City: coast of Dnister, 20-21.05.1986, 1 ♂ (S. Zhrazhevsky). Vinnytsia Region: Chechelnyk District: Chechelnyk City, 4.5 km S, "Karmelyuk's Podillya" National Nature Park, "Vyshenke" locality, 26-27.05.2014, 1 ♂ (V. Gorobchysyn). Zakarpattya Region: Mizhgirya District: Kolochava village, 500 m a. s. l., Biological station of Uzhhorod University, 15.08.1995, 2 ♂; 2-4 km S, along Kvasonetz stream, 600-1000 m a. s. l., 12-17.08.1995, 30 ♂; along Tereblya River, 500 m a. s. l., humid meadows, 12.08.1995, 11 ♂; 5 km W, 1000-1400 m a. s. l., alp steppe, 14-15.08.1995, 13 ♂; 7 km SE, 1200 m a. s. l., "Krasna" alp steppe, 16.08.1995, 22 ♂; Uzhgorod District: Nyzhne Solotvyno village, meadows and beech forest, 98°33'N, 22°26'E, 140-200 m a. s. l., 16-23.08.2014, 25 ♂. Zaporizhzhya Region: Melitopol City: "Kamyany Mogyly" State Reserve, at stones, 28.08.1997, 16 ♂; Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, estuary of Samara River, meadows, 23. & 28.08.1997 and 4-15.06.2008, 12 ♂ (Yu. Verves). Zhytomyr Region: Zhytomyr City: coast of Teteriv, 17.05.1988, 1 ♂ (S. Zhrazhevsky).

85. *Sarcophaga jupalnica* Lehrer, 1967*

Distribution: Europe: RO, UA: Ivano-Frankivsk and Vinnytsia Regions. This species firstly recorded for Ukraine.

Material examined: Ivano-Frankivsk Region: Kosiv District: Rozhniv village, bushes, 23.05. & 20.08.1975, 2 ♂ (Yu. Verves). Vinnytsia Region: Chechelnyk District: "Karmelyuk's Podillya" National Nature Park, Lyubashivka village, 5.07.2013, 1 ♂ (V. Gorobchysyn).

86. *Sarcophaga hennigi* Lehrer, 1978

Distribution: Europe: AT, CH, HR, RS, SI, UA: Zakarpattya Region.

Material examined: Zakarpattya Region: Uzhgorod District, Nyzhne Solotvyno village, 98°33'N, 22°26'E, 140 m a. s. l., hornbeam forest border, on leaves, 16. & 20.08.2014, 3 males (Yu. Verves).

Austria: without day date: Umg. Admont, Styr., 5 ♂; Umg. Bad Aussee, 1 ♂; Göller Subalp, A. l., 1 ♂; Umg. Gosau, A. s., 2 ♂; Klachau-Tauplitz, Styr. b., 1 ♂; Gr. Löckenmoos b. Gosau, 1 ♂; Oberlaussa, A. s., 3 ♂; Pfaffenkogel bei Stübing, 1 ♂; Prebersee, 1 ♂; Ramsau bei Schladming, Styr., 1 ♂; Sengsengebirge, A. s., 1 ♂ (H. Franz).

87. *Sarcophaga lehmanni* Müller, 1922

Distribution: Palaearctic: Europe: AD, AL, AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES (mainland and Balearic Is.), FR (mainland), GR, HR, HU, IT (mainland and Sicily), LT, LV, MD, MT, NL, PT, RO, RS, RU (Bashkortostan, Ivanovo, Moscow, Karelia, Kirov, Kursk, Nizhny Novgorod, Leningrad, Lipetsk, Voronezh and Yaroslavl Regions), SE, SK, TR, UA; North Africa: DZ, MA; Asia: AF, AM, AZ, EG (Sinai), GE, IL, IR, IQ, KZ, RU (Chechnya, Dagestan, Ingushetia, Kemerovo, Krasnodar, Novosibirsk, Tyumen and Sverdlovsk Regions), SA, SY, TM, TR, UZ. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae bred on rotten fish and mammals (Khitzova, 1967), living earthworms (Eberhardt, 1955; Viktorov-Nabokov & Verves, 1975), especially *Allolobophora* spp. (Kirchberg, 1961) and on larvae of lepidopteran hosts *Erannis defoliaria* (Geometridae) and *Lymantria dispar* (Lymantriidae) (original data). Imagoes distributed in mesophitic forests, borders of ponds and streames, near buildings, at roads, ground, leaves, on walls of buildings (Verves, 2013). Flies attracted to cattle dung, faeces (Martínez-Sánchez et al., 2000b; Trofimov, 1969), piglet carcasses (Prado e Castro et al., 2010), flowers of *Anethum graveolens* and *Solidago canadensis* (Verves, 2003).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, yard, 3-8.06.2003 & 10.06.2006, 4 ♂; coast of Dnipro, 16-19.08.1988, 5 ♂; Krugly I., 6. & 30.07.1986, 2 ♂; (A. Drozdovska, Yu. Verves, S. Zrazhewsky); Khreshchatyk village, 29.08.2003, 1 ♂ (A. Drozdovska); Keleberda village, sandy dunes, 12.05.2004, 1 ♂ (Yu. Verves); Trakhtemyriv village, 30 km N of Kaniv, 30.06.1988, 2 ♂ (S. Zrazhewsky). Chernigiv Region: Borzna District: Makoshyno village, meadows, 20.08.2000, 25 ♂; Yaduty village, Biological Station of Nizhyn University, pine forest, 11.06.-25.08.2000, 278 ♂; Ichnya District: "Trostyanetz" Dendrological Park, meadows and forest at Lake coast, at ground and leaves, 5-13.08.1999, 196 ♂ (Yu. Verves); Sosnytsya District: Khlopyanyky village, forest border, 7-22.07.2003, 7 ♂ (A. Drozdovska, L. Khrokalo). Crimea: Bakhchisaray District: Beregove village, sandy area, 11-23.08.1996, 4 ♂ (Yu. Verves); Simferopol City: Gagarin Park, banks of Salgir river, meadows, 9.05.2005, 1 ♂ (L. Khrokalo). Dnipropetivsk Region: Novomoskovsk District: Andriivka village, border of oak forest near lake, meadows, feather grass steppe, 2.-11.08.2000, 36 ♂; Fedorivka village, meadows along Samara River, 1.08.2000, 11 ♂. Kherson Region: Genichesk District: Chernigivka village, coast of Sivash lagoon, steppe ground road, old mulberry plantation, on drop, forest shelter belt, 11-24.07.1998, 73 ♂. Kyiv City: Desna District: "Druzhby Narodiv" park, sandy coast of Dnipro and dry meadows, 1.07.2001 & 8.07.2005, 21 ♂; "Lisova" subway-station, 5 km E, mixed forest and bushes on bank of Lisove lake, 20.07.2004, 2 ♂; Dnipro District: Hydropark, bushes nr Berizka lake, 22.06. & 20.09.2006, 12.06.2007 & 16.06.2010, 49 ♂, 1 ♀; Moscow bridge, 2 km N, unnamed island on Dnipro, 16.-30.05. and 28.08.2008, 4 ♂; Rayduzhny Massive, bushes on bank of Malynivka lake, 23.06.2005, 7 ♂; Trukhaniv Is., bank of Babyne lake, 12.08.2007, 1 ♂; Holosiiv District: Baykove Cemetery, 13.07.-30.09.2003 & 16.08.2004, 48 ♂; "Didorovsky" pond, humid banks, 25.08-4.09.1999, 11.07-9.08.2002, 21.09.2003, 28.06.2004 & 12.09.2005, 39 ♂; Dyky island at Dnipro, sandy area, N 50°17'02", E 30°39'22" 8.09.2011, 1 ♂; Holosiiv Park in memory Maxym Rylsky, 10.06.2009, 15 ♂; Holosiivska street 12, wall of building, 50°24'25"N, 30°30'22"E, 16.09.2011, 1 ♂; Kozacha street, on leaves and walls, 7.07.2005, 19 ♂; Kozachy I. at Dnipro, 12 km S of Kyiv City, 9.09.2009, 2 ♂; National Exhibition Centre, busches, 27.08.1999 & 26.05.2002, 8 ♂; "Prospect Nauki" avenue, hills "Lysa Gora", bushes, 8.05.2003, 17-19.08.2004 & 14.05.2005, 51 ♂; Pyrogiv field Museum, 24.08.1999 & 28.05.2000, 50 ♂; "Sovky hole" ponds, humid meadow, 10.09.2000, 31.07.2002, 16.07. & 1.08.2003, 3.05. & 27.08.2004 & 11.07.2005, 18 ♂; "Theophania" park, 11.06.-29.07.2013 & 8.09.2014, 50 ♂, 1 ♀; Uralska street, 3-6.07.2009, 4 ♂; Vasylkivska street 33, yard, 23.06.-8.08.2008, 18.05.-1.10.2009, 5.05. - 28.07.2010 & 9.06.2011, 144 ♂; Vasylkivska street 98, yard, 20.04.-3.10.2002, 327 ♂; indoor of laboratory building, on windows, 5.09.2002, 1 ♂; Williams street, dry meadows, 10-28.07.2001 & 25.04.-19.08.2002, 36 ♂; Obolon District: Redkino Lake, sandy shores 4.07.2004, 2 ♂; Verbne Lake, 21.04. & 31.08.2004, 4 ♂, 3 ♀; unnamed island on Dnipro, N 50°30'25", E 30°31'16", 28.04. -22.09.2011, 46 ♂; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 33 ♂; Podil District: Shevchenko square, humid meadow nr

pond, 3-4.06.2000, 15.07.2005 & 27.09.2006, 66 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 35 ♂ (A. Drozdovska, L. Khrokalo, Yu. Verves); Kyiv Region: Bila Tzerkva City: "Oleksandriya" park, 3.05.2009, 12 ♂; Boryspil District: Rozhny village, bushes at coast of Dnipro, 15-22.08.1999, 54 ♂; Brovary District: Zazymya village, 5 km N, meadows near Desna, 1.08.2001, 3 ♂; Kyiv-Svyatoshyn District: Gostomel village, 4 km N, meadows at right bank of Irpin river, 8.07.2001, 9 ♂; Irpin City, 2-4 km E, forest nr bog, 26.04.2003, 17 ♂; Kruglyk village 10 km S of Kyiv, meadow nr pond, 30.04.2000, 7 ♂; Moshchun village, humid meadows near forest stream, 8.09.2003, 4 ♂ (Yu. Verves); Novosilky village, maple forest, host (*Erannis defoliaria*) collected in April 1987, 1 ♂ bred 28-29.05.1987 (V. Rafalsky); Zhukiv I., 20 km S of Kyiv, 9.09.2002, 1 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 29.05., 4.06.2003 & 12.05., 15.06.2004, 26 ♂; Obukhiv District: Stugna river nr Kyiv-Obukhiv road, sandy coast 27.5.2001, 9 ♂; Tatzenky village, 3 km S, at leaves and ground at border of pine forest nr lake, 14.09.2003, 8 ♂; Ukrainka City, 4 km W, at leaves and ground at border of pine forest nr lake, 21.08.2004, 3 ♂; Velyki Dmytroychi village, grass coast of stream & asp forest nr bog, 27.06.1997, 2.05., 4.07.1999 & 29.06.2001, 33 ♂; Vyshgorod District: Osishchyna village, coast of lake, meadows, 3.06.2007, 1 ♂ (Yu. Verves). Mykolaiv Region: Berezanka District: Tiligul lyman, coast, 21.05.1988, 1 ♂ (S. Zrazhewsky). Ochakiv District: Kinburn sandy area, 10.05.2004, 2 ♂. Odesa Region: Ismail District: Ismail City, 4-8.08.2009, 1 ♂; Kyslytza village, 5 km SE, 7. and 9.08.2009, 2 ♂; Maly Taman I., 15.07.2003, 1 ♂; Suvorove village, 20-23.08.2009, 1 ♂ (V. Corobchysyn, Yu. Protzenko). Poltava Region: Grebinky District: Kulazhyntzy village, meadows, 13 and 15.08.2010, 5 ♂; Marynivka village, 9.07.08, 1 ♂; Oleksandrivka village, kurgan "Gostra Mogyla", 14.07.2009, 1 ♂; Shkuraty village, locality "Ostriv, sandy road, 15.08.2010, 3 ♂; Ulyanivka village, meadows, 13.07.2009, 1 ♂; Pyryatyn District: Bilotzerkivtsi village, locality Murentzeve, 15.08.2010, 3 ♂; Davydivka village, meadows, 15.07.2009, 1 ♂; Deymanivka village, locality "Kuty", meadows, 8.07.2009, 1 ♂; Grabarivka village, meadows nr Ruda river, 15.07.2009, 22 ♂; Gurdyntsi village, on flowering *Apiaceae*, 18-22.07.2005, 11 ♂; Kaplyntsi village, meadows, 13.07.2009, 1 ♂; Keybalivka village, meadows near Uday river, 11-18.07.2009 & 15.08.2010, 10 ♂; Kharkivtsi village, 2 km S, locality "Velyki Solontzi", 13-14.07.09, 1 ♂; Krotv village, 8.07.08, 2 ♂; Lelyaky village, 17-21.7.2005, 11.07.2009, 12. & 16.08.2010, 25 ♂; Masalske village, meadows at bank of Uday river, 14.08.2010, 3 ♂; Povstyn village, locality "Burty", meadows, 12.07.2009, 1 ♂; Shkuraty village, meadows, 17.07.2009, 2 ♂ (A. Drozdovska, Yu. Protzenko, O. Tkachenko, Yu. Verves). Sumy Region: Serednya Buda District: Desnyansko-Starogutsky National Nature Park, 8.07.2008, 1 ♂ (Yu. Protzenko); Romny City: banks of Romenka river, meadows and bushes & at flowers of *Taraxacum officinale*, 21-30.08.2009 & 5.05.2013, 114 ♂ (Yu. Verves); Sumy District: Vakolovshchyna village, humid meadow, 18.05.2006, 2 ♂ (O. Govorun); Trostyanets City: meadows and forest at lake coast, 3.08.1999, 12 ♂ (Yu. Verves). Zakarpattyia Region: Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140-160 m a. s. l., 16-23.08.2014, 26 ♂; Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140 m a. s. l., 16-23.08.2014, 1 ♂. Zaporizhzhya Region: Melitopol City: "Kamyany Mogly" Reserve, at stones, 28.08.1997, 13 ♂; Yakymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, estuary of Altagir river, meadows and bushes, 23-28.08.1997 & 4-15.06.2008, 13 ♂; (Yu. Verves).

88. *Sarcophaga moldavica* Rohdendorf, 1937

Distribution: Palaearctic: Europe: CZ (Moravia), HR, HU, MD, PL, RO, SK, UA: Chernivtsi, Odesa and Zakarpattyia Regions.

This species is accompanying the natural dry forest stands at lower elevations (Povolný & Verves, 1997).

Material examined: Zakarpattyia Region: Mizhgirrya District: Kolochava village, 5 km W, 1000-1400 m a. s. l., alp steppe, 14-14.08.1995, 2 ♂.

89. *Sarophaga mouchajosefi* Lehrer, 1978*

Distribution: Palaearctic: Europe: CZ (Moravia), SK*, UK*

Material examined: Zakarpattya Region: Rakhiv Disdtrict: bank of Apshynetz Lake, humid meadow, 1500 m a. s. l., 5.08.1964, 1 ♂ (L. Zimina). Slovakia: Skýcov, 22.05.1958, 1 ♂ (J. Čepelák); 12.09.1958, 1 ♂ (Pláček).

90. *Sarcophaga schusteri* Lehrer, 1959

Distribution: Palaearctic: Europe: AT, BG, CZ (Moravia), FR, HU, IT (Sicily), RO, SK, UA: Cherkasy*, Chernigiv*, Chernivtsi* and Zakarpattya Regions.

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, hill "Maryina Gora", 220 m a. s. l., 26.06.2010, 1 ♂ (Yu. Protzenko); Chernigiv Region: Ichnya District: "Trostyanetz" dendrological park, meadows and forest at coast of lake, 5.08.1999, 1 ♂; Chernivtsi Region: 25 km SW Dolyshniy Shepit village, 1300 m o. s. l., tip of Magura Mt., 12.07.2000, 6 ♂; Zakarpattya Region: Mizhgirya District: Kolochava village, 5 km W, 1000-1400 m a. s. l., alp steppe, 14-14.08.1995, 13 ♂; 7 km SE, 1200 m a. s. l., alp steppe "Krasna", 16.08.1995, 17 ♂, 1 ♀ (one pair was collected *in copula*); Uzhgorod District: Nyzhne Solotvyno village, tip of hill, beech forest, 98°33'N, 22°26'E, 200 m a. s. l., 16-23.08.2014, 1 ♂ (Yu. Verves).

91. *Sarcophaga serbica* Baranov, 1930

Distribution: Palaearctic: Europe: BG, IT (mainland), RO, RS, RU (Moscow); SK, UA: Kharkiv Region and Kyiv City.

Flies prefer warm, moderately humid forests (Povolný & Verves, 1997).

Material examined: Kyiv City: Vasylkivska street 98, yard, 5.05.2002, 1 ♂ (Yu. Verves).

92. *Sarcophaga subvicina* Rohdendorf, 1937

Distribution: Palaearctic: Europe: AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland and Corsica), HU, IE, IT (mainland and Sicily), LV, MD, NL, NO, PL, PT, RO, RS, RU (Bashkortostan, Ivanovo, Karelia, Moscow, Leningrad, Lipetsk and Voronezh Regions), SE, SK, UA, UK (England); North Africa: TN; Asia: RU (Chechnya, Dagestan, Krasnodar and North Osetia Regions), TJ, TM, TR. UA: Cherkasy, Chernigiv, Chernivtsi, Kharkiv, Khmelnytsky, Kyiv, Luhansk, Lviv, Poltava, Sumy, Vinnytsia and Zakarpattya Regions.

Larvae parasitize earthworms (Kirchberg, 1954, 1961), but have also been reared as a saprophage from a dead snail *Limax* sp. (Pape, 1987) and maintained on mammal meat and liver in laboratory conditions (Baudet, 1982; Pollock, 1972). Imagoes prefer meadows, bushes, alp steppe, lowland flood-plain forests, limestone territories, chalk grasslands, suburban and urban gardens and parks (Allen, 1966; Kejval, 1998; Povolný & Verves, 1990, 1997; Rudzinski & Flügel, 2007) at altitudes up to 2100 m a. s. l. (Ziegler & Lange, 2001). This species was found to be an indicator for urban habitats during summer (Fremdt & Amendt, 2014). Adults prefer to visit the small invertebrate and vertebrate corpses (Blackith & Blackith, 1990), fleshly killed piglet (Prado e Castro et al., 2011), flowers of *Anethum graveolens*, *Phalacroloma annuus* and *Solidago canadensis* (Verves, 2003, 2010, 2013).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reserve, hill "Maryina Gora", 220 m a. s. l., 20.05. & 16-26.06.2010, 18 ♂ (Yu. Protzenko, Yu. Verves). Uman City: "Sofiivka" dendrological park, 11.-14.06.2006, 7 ♂. Chernivtsi Region: Kitzman District: Stavchany village, 8.08.1959, 2 ♂ (O. Viktorov). Kyiv City: Dnipro District: Hydropark, bushes, 16.06.2010, 1 ♂; Holosiiv District: Baykove Cemetery, 13.07., 30.09.2003 & 16.08.2004, 9 ♂; Chervonozoryany Avenue, school yard, at trunks of trees, 27.09.2006, 1 ♂; "Didorovsky" pond, humid banks, 25-28.08.1999, 5.07-28.08.2002 & 28.06.2004, 19 ♂; Kozacha street, on leaves and walls, 7.07.2005, 2 ♂; National Exhibition Centre, bushes, 27.08.1999 & 26.05.2002, 2 ♂; "Prospect Nauki" avenue, hills "Lysa Gora", bushes, 19.08.2004, 2 ♂; "Sovky hole", coast of pond, humid meadow, 31.07.-29.08.2002, 16.07.2003 & 27.08.2004, 5 ♂; "Teremky-3" residential community, 14.07.2001, 1 ♂; (Yu. Verves); "Theophania" park, nr building, 8.09.2014, 2 ♂; Uralska street, yard, 3-6.07.2009, 6 ♂ (A. Drozdovska); Vasylkivska street 33, yard, 5.07.-8.08. 2008, 29.07.2009 & 18.05.-7.07.2010, 38 ♂; Vasylkivska street 98, yard, 23.04.-20.09.2002, 225 ♂; ibid., indoor of laboratory building, on windows, 28.10.2002, 3 ♂; Williams street, dry meadows, 10-

28.07.2001 & 19.08.2002, 7♂; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills, 21.05.2009, 3♂; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000 & 15.07.2005, 12♂; "Syretz" residential community, humid meadow nr pond, 3-4.06.2000 & 15.07.2005, 12♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 32♂. Kyiv Region: Bila Tzerkva City: "Oleksandriya" park, 3.05.2009, 1♂. Sumy Region: Romny City: banks of Romenka river, meadows and bushes, 21-27.08.2009, 3♂; Trostyanetz City: meadows and forest at lake coast, 3.08.1999, 1♂. Zakarpattyia Region: Mizhgirrya District: Kolochava village, 2-4 km S, bank of Kvasovetz stream, humid meadows, 600-1000 m a. s. l., 12.08.1995, 2♂ (Yu. Verves).

93. *Sarcophaga ukrainica* Rohdendorf, 1937

Distribution: Palaearctic: Europe: BG, HR, HU, PL, RO, RS, SK, UA: Dnipropetivsk, Kharkiv, Kyiv, Odesa and Poltava Regions.

Flies prefer dry meadows and bottom and slopes of ravine in feather-grass steppe; baited on feces (Verves, 2000; Povolný & Verves, 1990, 1997).

Material examined: Dnipropetivsk Region: Novomoskovsk District: Andriyivka village, Biospherical Station of Dnipropetivsk University, 2 km N, steppe, 3-16.08.2000, 11♂. Kyiv Region: Obukhiv District: Velyki Dmytroychi village, grass coast of stream, 27.06.1997, 1♂ (Yu. Verves).

94. *Sarcophaga variegata* (Scopoli, 1763)

Distribution: Palaearctic: Europe: AD, AL, AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland) GR, HR, HU, IE, IT (mainland, Sardinia and Sicily), LT, LU, LV, MD, MT, NL, NO, PL, PT, RO, RS, RU (Arkhangelsk, Bashkortostan, Chuvashia, Karelia, Leningrad, Lipetsk, Moscow, Novgorod, Voronezh and Yaroslavl Regions), SE, SK, UA, UK; North Africa: DZ, EG, MA; Asia: CN (Neimenggu, Xinjiang), EG (Sinai), GE, IL, IR, KG, KZ, MN, RU (Altai, Amur, Buryatia, Chechnya, Chita, Dagestan, Irkutsk, Kamchatka, Krasnoyarsk, Magadan, Orenburg, Novosibirsk, Primorye, Sakhalin, Tomsk, Tuva, Tyumen and Yakutia Regions), TJ, TR. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattyia, Zaporizhzhya and Zhytomyr Regions.

Larvae develop in dead snails, insects, vertebrates (Verves & Khrokalo, 2006), included human remains (Introna et al., 1998), human faeces (Birg, 1971), rotten meat (Salwa & Abdel-Rahman, 1983; Sukhova, 1952) and liver (Rognes, 1986); are known as facultative parasites of earthworms *Allolobophora chlorotica* and *A. rosea* (Eberhardt & Steiner, 1952; Kirchberg, 1954, 1961), snails *Euparyphia pisana* (Berner, 1960), predators of lepidopteran pupae *Agrotis segetum* (Séguy, 1941), *Dendrolimus pini* (Yarmanshevich, 1970), *Hyphantria cunea* (Sikura, 1959), *Lymantria monacha* (Baer, 1921). Maggots are producers of facultative tissue myiasis of sheep (Sevgili et al. 2004b) and humans (Séguy, 1941), occasional intestinal myiasis of men (Emden, 1954). Adults prefer different types of meadows, mesophytic and humid forests, parks and gardens (Faucherre & Cherix, 1998; Verves & Khrokalo, 2006), chalk grasslands and limestone hillsides (Povolný, 1999; Rudzinski & Flügel, 2007) up to 2300-2500 m a. s. l. (Menzel & Ziegler, 2002; Ziegler & Lange, 2001). This species was found to be an indicator for urban habitats during summer (Fremdt & Amendt, 2014). Flies attracted to animal (Castillo Mirables, 2002) and human (Mohamed Aly et al., 2012) carcasses, roten meat (Sevgili et al., 2004b), faeces and decomposed fruits (Shura-Bura, 1952), flowers of *Achillea millefolium*, *Anethum graveolens*, *Heracleum sibiricum*, *Phalacroloma annuus*, *P. septentrionale*, *Pyrethrum corymbosum*, *Solidago canadensis* (Verves, 2003, 2013), *Taraxacum officinale* (original data). Flies are vectors of dermatophytic fungus *Microsporum canis* (Pinetti et al., 1974) and *Salmonella* sp. (Greenberg, 1971).

Material examined: Cherkasy Region: Kaniv District: Keleberda village, 3 km E, humid forest near pond, 20.05.2002, 1♂; Kaniv State Nature Reserve, yard, at vegetation, 20.05-8.06.2003, 4♂; Uman City: "Sofiivka" dendrological park, 11.06.2005 & 13-14.06.2006, 20♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, shore of Trubin Lake, 12.07.2000, 1♂; Ichnya District: "Trostyanetz" Dendrological Park, meadows and forest at lake coast, 5-13.08.1999, 110♂ (Yu. Verves); Sosnytsya District: Khlopyanyky village,

forest border, 7-14.07.2003, 1 ♂ (L. Khrokalo). Crimea: Simferopol City: Gagarin Park, banks of Salgir River, meadows, 27.08.2004 & 9.05.2005, 2 ♂ (L. Khrokalo, Yu. Verves). Dnipropetivsk Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, bred on dead mouses, no further data, 1 ♂ (M. Shulman); Samara River, humid meadow, at flowers of *Heracleum* sp. & feather grass steppe, 4-10.08.2000, 21 ♂; Fedorivka village, meadows along Samara River, 1.08.2000, 7 ♂. Kyiv City: Desna District: "Druzhby Narodiv" park, meadows, 8.07.2005, 1 ♂; "Lisova" subway-station, 5 km E, mixed forest and bushes near Lake Lisove, 20.07.2004, 1 ♂; Dnipro District: Hydropark, bank of Berizka Lake, bushes, 22.06.2006 & 16.06.2010, 10 ♂ (Yu. Verves); Moscow Bridge, 2 km N, unnamed island, 16.05.2008, 1 ♂ Rayduzny Massive, bank of Malynivka Lake, bushes, 23.06.2005, 5 ♂; (L. Khrokalo), Holosiiv District: Baykove Cementery, 13.07.-24.09.2003 & 16.08.2004, 61 ♂; "Didorovsky" pond, humid banks, 21.09.2003, 28.06.2004 & 12.09.2005, 17 ♂; "Holosiiv" Park in memory of M. Rylsky, 10.06.2009, 3 ♂; Kozacha street, on leaves and walls"of buildings, 7.07.2005, 5 ♂; National Exhibition Centre, busches, 27.08.1999 & 26.05.2002, 11 ♂ (Yu. Verves); "Prospect Nauki" avenue, hills "Lysa Gora", bushes, 26.07.2002, 8.05.2003 & 17-18.08.2004, 34 ♂ (A. Drozdovska, Yu. Verves); "Sovky hole", humid meadow, 10.09.2000, 30.07., 29.08.2002, 27.06, 16.07.2003, 3.05., 27.08.2004 & 9.06.2011, 42 ♂; "Theophania" park, board of humid forest near pond, 11.05.-1.09.2002, 22.05.2008, 19.06.-29.07.2013 & 8.09.2014, 106 ♂ (Yu. Verves); Uralska street, yard, 3-6.07.2009, 12 ♂ (A. Drozdovska); Vasylkivska street 33, yard, 23.06.-8.08.2008, 18.05.-2.10.2009, 5.05.-28.07.2010, 145 ♂; Vasylkivska street 98, yard, 11.04.-30.09.2002, 341 ♂, 1 ♀ (one pair was collected in copula 11.04); indoor of laboratory building, on windows, 5.09.-28.10.2002, 3 ♂; Williams street, dry meadows, 10-28.07.2001, 25.04.-19.08.2002 & 20.08.2003, 66 ♂; Obolon District: Verbne Lake, sandy bank, 31.08.2004, 1 ♂; Pechersk District: Kyiv-Pechersk Lavra, 21.05.2009, 12 ♂; Podil District: Shevchenko square, humid meadow nr pond, 3-4.06.2000, 15.07.2005 & 27.09.2006, 13 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-28.8.2003, 85 ♂. Kyiv Region: Bila Tzerkva City: "Oleksandria" dendrological park, 3.05.2009, 2 ♂; Boryspil District: Rozhny village, bushes, 19.08.1999, 2 ♂; Kyiv-Sviatoshyn District: Hostomel village, meadows, 8.07.2001, 14 ♂; Irpin City, forest nr bog, 26.04.2003, 7 ♂; Kruglyk village, meadow nr pond, 30.04.2000, 1 ♂; Moshchun village, humid meadows near forest stream, 8.09.2003, 8 ♂; Pyrogiv village, field museum, 24.08.1999 and 28.05.2000, 4 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 4.06.2003, 1 ♂; Obukhiv District: Tatzenky village, 14.09.2003, at leaves and ground at border of pine forest, 3 ♂; Ukrainka City, 21.08.2004, at leaves, 1 ♂; Velyki Dmytryvychi village, asp forest nr bog, 4.07.1999, 2 ♂; Rokytné District: Busheve village, 49°39'N/30°35'E, open cast, 27.07.2012, 1 ♂. Poltava Region: Pyryatyn District: Davydivka village, meadows, 15.07.2009, 1 ♂; Grabarivka village, meadows near Ruda River, 15.07.2009, 7 ♂ (Yu. Verves); Gurbintsi village, on flowering *Apiaceae*, 18-23.07.2005, 7 ♂; Kroti village, 8.07.08, 1 ♂ (A. Drozdovska); Keybalivka village, meadows near Uday River, 12-15.07.2009, 2 ♂; Kharkivtzy village, locality "Velyki Solontzi", 13-14.07.09, 1 ♂. Sumy Region: Romny City: banks of Romenka River, meadows and bushes, at flowers of *Taraxacum officinale*, 21-30.08.2009 & 5.05.2013, 47 ♂ (Yu. Verves); Sumy District: Vakolovshchyna village, humid meadow, 18, 31.05.2006 & 5.14.06.2007, 6 ♂ (O. Govorun); Trostyanetz City: meadows and forest at lake coast, 3.08.1999, 2 ♂. Vinnitsia Region: Chechelnyk District: Chechelnyk City, 4,5 km S, "Karmelyuk's Podillya" National Nature Park, "Vyshenke" locality, 26-27.05.2014, 1 ♂ (V. Gorobchysyn). Zakarpattya Region: Mizhgirrya District: Kolochava village, 500 m a. s. l., board of beech forest near Biological station, 14-15.08.1995, 10 ♂; 2-4 km S, along Kvasonetz Stream, 500-1000 m a. s. l., humid meadows, 12, 17.08.1995, 22 ♂; 5 km W, 1000-1400 m a. s. l., alp steppe, 14-15.08.1995, 48 ♂; 7 km SE, 1200 m a. s. l., "Krasna" alp steppe, 16.08.1995, 54 ♂; Uzhgorod District: Nyzhne Solotvyno village, meadows and beech forest, 98°33'N, 22°26'E, 140-200 m a. s. l., 16-23.08.2014, 23 ♂ (Yu. Verves). Zhytomyr Region: Zhytomyr City, coast of Teteriv River, 17.05.1988, 1 ♂ (S. Zrazhevsky).

/ ***Sarcophaga wiesenthali*** Lehrer, 1989

Distribution: Palaearctic: Europe: RO, SK*

Material examined: Slovakia: Veľký Inovec, 20.06.1957, 1 ♂ (M. Slamečková); Údolie Nitry, 19.08.1957, 1 ♂ (Pristachová) /

95. *Sarcophaga zumptiana* Lehrer, 1959

Distribution: Palaearctic: Europe: AT, BA, CZ (Moravia), FR (mainland); HR, HU, RO, RS, SK, UA: Ivano-Frankivsk and Zakarpattya Regions.

This species in mountains occurs from termophilous oak and beech forests stands up to subalpine elevations. It was discovered wherever natural deciduous forests of various vegetation tiers (Povolný & Šustek, 1983; Povolný & Verves, 1997).

Material examined: Zakarpattya Region: Mizhgirrya District: Kolochava village, 500 m a. s. l., board of beech forest near Biological station, 14.08.1995, 1 ♂; 7 km SE, 1200 m a. s. l., "Krasna" alp steppe, 16.08.1995, 2 ♂ (Yu. Verves).

Subtribe Boettcheriscina**96. *Kramerea schuetzei* (Kramer, 1909)**

Distribution: Palaearctic: Europe: AT, BG, BY, CH, CZ (Bohemia and Moravia), DE, FR (mainland), HR, HU, IT (mainland), MD, MK, NL, RS, RU (Bashkortostan, Belgorod, Ivanovo, Kaliningrad, Karelia, Leningrad, Lipetsk, Moscow and Voronezh Regions), SK, UA; Asia: AZ, CN (Beijing, Gansu, Heilongjiang, Henan, Jilin, Liaoning, Neimenggu, Shaanxi, Shanxi and Sichuan), JP (Hokkaido, Honshu, Kyushu and Shikoku), KP, KR, KZ, MN, RU (Altai, Amur, Buryatia, Chita, Jewish Autonomy, Khabarovsk, Kuril Islands, Novosibirsk, Primorye, Sakhalin and Tuva Regions). Oriental: TW. UA: Cherkasy, Chernigiv*, Crimea, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kyiv, Poltava*, Volyn, Zakarpattya and Zhytomyr Regions.

Larvae are bred in small animal carcasses: dead snails (Kühlhorn, 1986), beetles, mouses, birds, fishes (Artamonov, 1983; Kano et al., 1967), rotten meat (Verves & Khrokalo, 2006) and known as facultative predators of lepidopteran pupae, occasionally caterpillars: e. g. *Aporia crataegi* (Kolomyietz, 1958), *Arctia* sp. (Lehrer & Dobrivojević, 1969), *Cosmotricha potatoria* (Zinovyev, 1962), *Dasychira albodentata* (Ivliev & Sinchylina, 1964; Nakonechny, 1973a; Zinovyev, 1962), *Dendrolimus pini* (Baer, 1921; Khitzova, 1968), *D. sibiricus* (Boldaruev, 1952; Kolomyietz, 1952, 1958; Orlov & Yurchenko, 1978; Zinovyev, 1962), *D. spectabilis* (Kano et al., 1967), *Dictyoploca japonica* (Artamonov, 1978), *Lymantria dispar* (Artamonov, 1988; Baranov, 1942; Čápek & Čepelák, 1970; Girfanova, 1962; Khanislamov et al., 1958; Nakonechny, 1973a; Novotný et al., 1998; Tabakovic-Tosic et al., 2013; Tereshkin & Lobodenko, 1997), *L. monacha* (Artamonov, 1983, 1988; Baer, 1921; Kolomyietz, 1958; Kramer, 1909; Nakonechny, 1973a; Povolný, 1988), *Orgya antiqua* (Nakonechny, 1973a), *Pygaera anastomosis* (Egorov, 1962), *Selenephera lunigera* (Nakonechny, 1973a), and adult cicada *Graptopsaltria nigrofuscata* (Hayashida, 2013). Flies prefer lowland flood-plain forests (Kejval, 1998) and forest-steppes up to 1500 m a. s. l. (Povolný & Verves, 1997); common in villages; hemisynanthropic species (Artamonov, 1987; Rohdendorf, 1959). Imago feed at sweat of man, mucous secrets from mouth and nose of hoof animals, haemolymph of wounded insects (Artamonov, 1992), faeces, rotten meat and fruits (Verves et Khrokalo, 2006), flowers of *Pimpinella saxifraga* (Girfanova, 1958d), *Chaerophyllum* sp., *Daucus* sp., *Pastinaca* sp. (Séguy, 1941).

Material examined: Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin lake, 8-11.07.2000, 2 ♂; Ichnya District: "Trostanets" dendrological park, meadows and forest at lake coast, 5.08.1999, 1 ♂. Kyiv City: Holosiiv District: Vasylkivska street 98, yard, 18.06.2002, 1 ♂; Pechersk District: Kyiv-Pechersk Lavra, bushes at hills near, 21.05.2009, 1 ♂. Poltava Region: Pyryatyn District: Grabarivka village, meadows nr Ruda river, 15.07.2009, 1 ♂. Zakarpattya Region: Uzhgorod District: Nyzhne Solotvyno village, tip of hill, beech forest, 98°33'N, 22°26'E, 200 m a. s. l., 22.08.2014, 1 ♂ (Yu. Verves).

97. *Rosellea aratrix* (Pandellé, 1896)

Distribution: Holarctic: Europe: AL, AT, BA, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland and Corsica), HR, HU, IE, IT (mainland and Sicily), LT, LV, MD, NL, NO, PL, RO, RS, RU (Bashkortostan, Ivanovo, Karelia, Leningrad, Lipetsk, Moscow and Voronezh Regions), SE, SK, UA, UK; Asia: AZ, CN (Liaoning and Neimenggu), GE, KZ, RU (Altai,

Amur, Buryatia, Irkutsk, Kamchatka, Khabarovsk, Krasnodar, Magadan, Stavropol, Tomsk and Tuva Regions), TR; North America: CA (Manitoba), US (Alaska). Oriental: VN. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Ivano-Frankivsk, Kharkiv, Kherson, Kirovograd, Kyiv, Mykolaiv, Odesa, Poltava, Sumy, Vinnytsia, Volyn, Zakarpattya, Zaporizzhya and Zhytomyr Regions.

Larvae are predators and develop in dead snails (Kühlhorn, 1986), insect and small animal carcasses (Blackith & Blackith, 1984), e. g. carabid beetles, mice, birds (Blackith et al., 1994); known as facultative parasites of imago of cerambicid beetle *Prionus coriarius* (Salaas, 1943), predators of necrobiontic maggots (Blackith & Blackith, 1984), and pupae of moth *Lymantria monacha* (Kramer, 1909); in the laboratory conditions reared on beef (Richet et al., 2011). Adult flies common in humid forests, sometimes on meadows (Gunárová & Slamečková, 1966; Trofimov, 1969), associated with limestone territories or lowland flood-plain forests (Kejval, 1998) at altitudes up to 1200 m (Kano et al., 1999). This species tends towards culturophily (Povolný & Verves, 1997). Imagoes feed at faeces, rotten meat, rotten fruits (Gregor & Povolný, 1961), aphid excreteta (Verves & Khrokalo, 2006), flowers of *Solidago canadensis* (Verves, 2013).

Material examined: Cherkasy Region: Kaniv District: Trakhtemyriv village, 07.1988, 1 ♂ (S. Zrazhevsky); Zarichchya I., 30.07.1968, 2 ♂ (O. Viktorov-Nabokov); Uman City: "Sofiivka" dendrological park, 11.06.2005 & 14.06.2006, 3 ♂. Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 7.07.-25.08.2000, 60 ♂; Ichnya District: "Trostyanetz" dendrological park, meadows and forest at lake coast, 4-11.08.1999, 8 ♂ (Yu. Verves). Crimea: Big Alushta District: Rybache village, "Kanakska Balka" hollow, meadows, 5-8.05.2005, 3 ♂ (L. Khrokalo). Kyiv City: Dnipro District: Hydropark, nr Berizka Lake, bushes, 22.06.2006 & 16.06.2010, 2 ♂ (Yu. Verves); Holosiiv District: "Didorovsky" pond, humid banks, 25.08-5.09.1999, 11.07-9.08.2002 & 21.09.2003, 23 ♂ (A. Drozdovska, Yu. Verves); "Holosiiv" park in memory Maxym Rylsky, 10.06.2009, 20 ♂, 2 ♀; Kozacha street, on leave, 7.07.2005, 1 ♂; National Exhibition Centre, bushes, 27.08.1999, 2 ♂; Olzhyn I. at Dnipro, 10 km S of Kharkiv Bridge, 16.09.2009, 4 ♂; "Sovky hole", humid meadow, 10.09.2000, 27.06.2003, 3.05.2004 & 9.06.2011, 6 ♂; "Theophania" park, 19.06.2013, 3 ♂; 15.10.014, 1 ♀; Vasylkivska street 33, yard, 28.05.2009, 1 ♂; Vasylkivska street 98, yard, 15.05.-21.06.2002, 7 ♂; Williams street, dry meadows, 12.08.2002, 1 ♂; Podil District: Shevchenko square, humid meadow, 3-4.06.2000 and 15.07.2005, 11 ♂; Solomyanka District: Strazhesko Hospital territory, at roads and leaves, 21-27.8.2003, 1 ♂. Kyiv Region: Bila Tserkva City: "Oleksandria" dendrological park, 3.05.2009, 1 ♂; Boryspil District: Rozhny village, bushes, 15-16.08.1999, 4 ♂; Brovary District: Zazymya village, meadow, 1.08.2001, 1 ♂; Myronivka District: Tulyntzy village, feather-grass steppe with bushes, 15.06.2004, 2 ♂; Obukhiv District: Velyki Dmytroychi village, asp forest nr bog, 4.07.1994, 27.06.1997 & 4.07.1999, 4 ♂. Poltava Region: Pyryatyn District: Grabarivka village, meadows near Ruda River, 15.07.2009, 1 ♂; Keybalivka village, meadows nr Uday River, 17.07.2009, 1 ♂. Sumy Region: Romny City: banks of Romenka River, meadows and bushes, 21-27.08.2009, 5 ♂. Zakarpattya Region: Mizhgirrya District: Kolochava village, 500 m a. s. l., board of beech forest near Biological station, 14.08.1995, 1 ♂; 2-4 km S, along Tereblya River, 500 m a. s. l., humid meadows, 12 and 17.08.1995, 2 ♂; 3 km SE, along Kvazovetz Stream, 700 m a. s. l., humid meadows, 14.08.1995, 1 ♂; 5 km SE, 1000 m a. s. l., board of beach forest, 15.08.1995, 1 ♂; Uzhgorod District: Nyzhne Solotvyno village, meadows and beech forest, 98°33'N, 22°26'E, 140-200 m a. s. l., 16-23.08.2014, 21 ♂. Zaporizzhya Region: Melitopol City, "Kamyany Mogily" State Reservation, at stones, 28.08.1997, 1 ♂ (Yu. Verves).

Tribe Raviniini Subtribe Raviniina

98. *Ravinia pernix* (Harris, 1780)

Distribution: Palaearctic: Europe: AD, AL, AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland and Corsica), GR, HR, HU, IE (Clare I.), IT (mainland, Sardinia and Sicily), LT, LV, MD, MNE, MT, NO, NL, PL, PT, RO, RS, RU (Astrakhan, Bashkortostan, Chuvashia, Ivanovo, Karelia, Kursk, Leningrad, Lipetsk, Moscow, Murmansk, Nizhny Novgorod, Novgorod, Tatarstan, Voronezh and Yaroslavl Regions), SE, SK, TR, UA, UK; North Africa: DZ, ES (Canary Is.), EG, LY, MA, PT (Azores), TN; Asia: AF, AM, AZ, CN (Beijing, Gansu, Hebei,

Heilongjiang, Henan, Hubei, Jiangsu, Jilin, Liaoning, Neimenggu, Ningxia, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Tianjin and Xinjiang), CY, EG (Sinai), GE, IL, IQ, IR, JO, JP (Hokkaido and Honshu), KG, Korean Peninsula, KZ, LB, MN, RU (Altai, Amur, Buryatia, Chechnya, Dagestan, Ingushetia, Irkutsk, Kabardi-Balkaria, Kamchatka, Karachay-Cherkessia, Khabarovsk, Koryakia, Krasnodar, Kurily, Magadan, North Osetia, Novosibirsk, Primorye, Sakhalin, Stavropol, Tomsk, Tuva and Yakutia Regions), SA, SY, Tibet, TJ, TM, TR, UZ. Oriental: BD, BT, CN (Guizhou, Hunan and Yunnan), IN (Andhra Pradesh, Arunachal Pradesh, Bihar, Himachal Pradesh, Jammu and Kashmir, Uttar Pradesh, West Bengal), NP, PK (Punjab). Afro-tropical: TD, YE. UA: Cherkasy, Chernigiv, Chernivtsi, Crimea, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kyiv, Luhansk, Lviv, Mykolaiv, Odesa, Poltava, Rivne, Sumy, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae are coprophagous, related to both human and animal faeces, lavatories, garbage, dung, rarely have been found in dead snails and mammals (Gadzhey, 1963; Kirchberg, 1961; Martínez-Sánchez et al., 2000b; Papp, 1971; Povolný & Verves, 1997; Richet, 1990; Rohdendorf, 1937; Sychevskaya, 1957, 1960, 1970; Tantawi et al., 1996; Trofimov, 1969; Verves, 1985; Zakharova, 1961), including humans' corpses (Velásquez et al., 2010); facultative predators of other shizophagous maggots (Pickens, 1981); caused occasional intestinal and facultative wound myiasis of men (James, 1947; Nandi, 2002; Sevgili et al., 2004b), known as facultative parasitoids of snail *Cantareus aspersus* (Verves, 2013), adult locusts *Chrysochraon dispar*, *Dociostaurus maroccanus*, *Podisma albina* (Callot, 1935; Séguy, 1941), caterpillars and pupae of *Loxostege sticticalis* (Verves, 1974), *Lymantria dispar* (Nakonechny, 1973a), *L. monacha* (Bengtsson, 1902; Nakonechny, 1973b), larvae of beetle *Oryctes nasicornis* (Baer, 1921). Adult flies prefer steppe, hemi-deserts, meadows, forest borders and settlements; hemisynanthropic species (Aivasova & Saphonova, 1973; Artamonov, 1983; Charykuliev, 1965; Povolný & Verves, 1990, 1997; Sychevskaya, 1966; Trofimov, 1969); in mountains up to 4800 m a. s. l. (Sychevskaya, 1970). Imago feed on faeces, dung, decomposed fruits (Birg, 1971; Shura-Bura, 1952), human flood (Sukhova, 1952), dead birds, rodents (Artamonov, 1993), piglets (Prado e Castro et al., 2011), aphid excreta and flowers of *Calluna vulgaris*, *Cornus sanguine*, *Euphorbia cyparissias*, *Prunus spinosa*, *Senecio vernalis* (Draber-Moňko, 1973). Flies are known as passive vectors of bacteria *Shigella flexneri* (Greenberg, 1971), dysentery bacillus "Flexner strain, type F" (Sychevskaya et al., 1959), vegetative cells and cysts of protozoan *Chilomastix mesnili* and *Giardia intestinalis* (Trofimov & Engelhardt, 1965), oncospheres of tapeworms, e. g. *Taeniarhynchus saginatus* (Nadzhafarov, 1967).

Material examined: Cherkasy Region: Chornobaiv District: Velyka Burivka, 6.07.1988, 2 ♂; Uman City: "Sofiivka" dendrological park, 11.06.2005, 1 ♀ (Yu. Verves); Zhazkiv District: Yurkivka village, meadow, 7.05.1989, 1 ♀; Zhazkiv City, 16 km E, 6.05.1989, 1 ♂; Zolotonosha District: Kropyvnia village, 16.06.1988, 1 ♀; Tyasmyn River, 45 km NE of source, 5.07.1988, 1 ♀ (S. Zhrazhevsky). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 11.06.-18.08.2000, 3 ♂, 4 ♀; Ichnya District: "Trostyanetz" Dendrological Park, meadows and forest at Lake coast, 5-13.08.1999, 19 ♂, 3 ♀. Crimea: Bakhchysaray District: Beregove village, sandy area, 4.08.2004, 1 ♀ (Yu. Verves); Big Alushta District: Rybache village, "Kanakska Balka" hollow, meadows, 5-8.05.2005, 1 ♀ (L. Khrokalo). Dnipropetivsk Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, bank of Samara River, meadows, at flowers of *Heracleum* sp., & feather grass steppe, 1.-8.08.2000, 8 ♂, 2 ♀. Kherson Region: Gola Prystan District: Chornomorsky State Reserve, Rybalchansky branch, near living buildings, 24.07.2006, 1 ♂ (Yu. Verves); Skadovsk District: Novo-Oleksiyivka village, near pig farm, at destroyed melon, horse and pig dung, 4.-5.09.1961, 25 ♂, 12 ♀ (O. Viktorov-Nabokov). Kyiv City: Dnipro District: Hydropark, nr Berizka Lake, 22.06.2006, 1 ♂; Holosiiv District: Baykove Cemetery, 24.09.2003, 1 ♀; Dyky island at Dnipro, sandy area, N 50°17'02", E 30°39'22" 6.10.2011, 1 ♀; Vasylkivska street 33, yard, 8.08.2008, 1 ♀; Podil District: Shevchenko square, humid meadow nr pond, 15.07.2005, 1 ♂. Kyiv Region: Boryspil District: Rozhny village, bushes, 15.08.1999, 2 ♂; Brovary District: Zazymya village, bushes, 1.08.2001, 2 ♂; Kyiv-Sviatoshyn District: Moshchun village, humid meadows near forest stream, 8.09.2003, 1 ♂; Obukhiv District: Tatzenky village, 14.09.2003, at leave, 1 ♂; Ukrainka City, at ground at border of pine forest, 21.08.2004, 1 ♂; Velyki Dmytroychi village, asp forest nr bog, 4.07.1999, 2 ♂ (Yu. Verves); Skvyra District: Pustovariivka village, 26-27.06.2004, 1

♂, 1 ♀ (A. Drozdovska); Vyshgorod District, Osischyna village, meadows, 3.06.2007, 1 ♂ (Yu. Verves). Mykolaiv Region: Berezanka District: Tiligul lyman, sandy coast, 12.06.1985, 27.07.1987, 30.04., 22.05. and 20.06.1988, 3 ♂, 4 ♀ (S. Zrazhevsky); Ochakiv District: Parutino village, debris of antic City Olvia, 16.07.2006, 6 ♂, 1 ♀ (Yu. Verves). Odesa Region: Ismail District: Kyslytsya village, 9.08.2009, 1 ♂; Suvorove village, 20-23.08.2009, 2 ♂ (V. Corobchysyn). Poltava Region: Pyryatyn District: Bilotzerkivtsi village, "Murentzeve" locality, 15.08.2010, 4 ♂; Grabarivka village, meadows near Ruda River, 15.07.2009, 1 ♂; Gurbyntsi village, on flowering *Apiaceae*, 18.07.2005, 2 ♀; Kaplyntsi village, meadows, 13.07.2009, 1 ♂; Keybalivka village, meadows at bank of Uday River, 11.-14.07.2009, 4 ♂; 14.07.2012, 2 ♂; Lelyaky village, meadows at bank of Uday River, 12.08.2010, 6 ♂, 1 ♀; 28.05.2013, 3 ♂, 1 ♀; Polstvyn village, 17.7.2007, 1 ♂ (A. Drozdovska, V. Gorobchysyn, Yu. Protzenko, O. Tkachenko, Yu. Verves). Sumy Region: Serednya Buda District: Desnyansko-Starogutsky National Nature Park, 3.-4.08.2013, 4 ♂, 1 ♀; Sumy District: Mogrytzya village, 7-9.08.2009, 3 ♂ (Yu. Protzenko); Romny City: banks of Romenka River, meadows and bushes, 21-27.08.2009, 2 ♂; Trostyanets City: meadows and forest at Lake coast, 3.08.1999, 2 ♂. Vinnytsia Region: Chechelnyk District: Chechelnyk Sity, 4,5 km S, "Karmelyuk's Podillya" National Nature Park, "Vyshenke" locality, 26-27.05.2014, 1 ♂; Chervona Greblya village, 7.07.2013, 1 ♂, 1 ♀, Lyubashivka village, 5.07.2013, 1 ♂ (V. Gorobchysyn). Zakarpattya Region: Mizhgirrya District: Kolochava village, 500 m a. s. l., board of beech forest near Biological station, 14.08.1995, 1 ♂; 2-4 km S, along River Tereblya, 500 m a. s. l., humid meadows, 12.08.1995, 1 ♂; 5 km W, 1000-1400 m a. s. l., alp steppe, 14.08.1995, 2 ♂; 7 km SE, 1200 m a. s. l., "Krasna" alp steppe, 16.08.1995, 1 ♂; Uzhgorod District: Nyzhne Solotvyno village, meadow, 98°33'N, 22°26'E, 140 m a. s. l., 23.08.2014, 1 ♂. Zaporizhzhya Region: Akymivka District: Bogatyrsk biological station of Melitopol State Pedagogical University, meadows and bushes, 4-15.06.2008, 1 ♂, 1 ♀; Pryazovske District: Stepanivka village, sandy coast of Azov sea, 24-27.08.1997, 2 ♂, 4 ♀ (Yu. Verves).

Tribe Johnsoniini
Subtribe Sarcotachinellina

99. *Sarcotachinella sinuata* (Meigen, 1926)

Distribution: Holarctic: Europe: AL, AT, BE, BG, BY, CH, CZ (Bohemia and Moravia), DE, DK, EE, ES, FI, FR (mainland), HR, HU, IE, IT (mainland), LV, MD, NL, NO, PL, RO, RS, RU (Astrakhan, Ivanovo, Kaliningrad, Leningrad, Moscow, Voroniezh and Yaroslavl Regions), SE, SK, UA, UK; Asia: AZ, CN (Liaoning, Qinghai and Shaanxi), GE, IL, KZ, MN, RU (Altai, Amur, Dagestan, Khabarovsk, Krasnodar, Primorye and Yakutia Regions), TJ, TR, UZ; North America: CA (Alberta, British Columbia, Northwest Territories, Ontario and Quebec), US (Alaska, California, Colorado, Connecticut, Florida, Idaho, Illinois, INna, Iowa, Maine, Massachusetts, Michigan, Nebraska, New Jersey, New York, North Carolina, North Dakota, Ohio, Oregon, Pennsylvania, Utah and Washington). UA: Cherkasy, Chernigiv, Chernivtsi, Dnipropetivsk, Donetsk, Ivano-Frankivsk, Kharkiv, Kherson, Khmelnytsky, Kirovograd, Kyiv, Odesa, Poltava, Sumy*, Ternopil, Vinnytsia, Volyn, Zakarpattya, Zaporizhzhya and Zhytomyr Regions.

Larvae are bred in liver, dead snails, insects, amphibies and rodents (Artamonov, 1983, 1993; Blackith & Blackith, 1990; Blackith et al., 1994). They were found in nests of birds, e. g. *Dymetella carolinensis* and caused myiasis of *Passer montanus* (Pape, 1987). Maggots are known as facultative internal parasitoids of pond snail, *Lymnaea palustris* (Judd, 1957), imagoes of locusts¹⁷, e. g. *Cannula pellucida*, *Dociostaurus maroccanus*, *Melanoplus bivittatus* (Rees, 1973), *M. differentialis* (Aldrich, 1916), *M. sanguinipes* (Rees, 1973), pupae of moth *Nomagria typhae* (Pape, 1987). Imagoes prefer humid meadows, bogs, reservoir banks, chalk grasslands and limestone hillsides (Judd, 1970; Kejval, 1998; Rudzinski & Flügel, 2007), and attracted to faeces and rotten meat (Aradi & Mihályi, 1971; Verves & Khrokalo, 2006), feed at flowers of *Angelica silvestris* and *Prunus spinosa* (Draber-Mońko, 1973).

Material examined: Cherkasy Region: Kaniv District: Kaniv State Nature Reservation, coast of Dnipro, 19.08.1988, 2 ♂ (S. Zrazhevsky). Chernigiv Region: Borzna District: Yaduty village, Biological Station of Nizhyn University, pine forest near Trubin Lake, 11.06.-19.08.2000, 29 ♂, 4 ♀; Ichnya District: "Trostyanets" dendrological park, meadows and forest at coast of lake,

¹⁷ Females infected only flying grasshoppers (Rees, 1973).

6.08.1999, 2 ♂ (Yu. Verves). Dnipropetivsk Region: Novomoskovsk District: Fedorivka village, meadows along Samara River, 1.08.2000, 2 ♂. Kyiv City: Desna District: "Lisova" subway-station, 5 km E, mixed forest and bushes near Lake Lisove, 20.07.2004, 1 ♂; Holosiiv District: "Didorovsky" pond, humid meadows, 12.09.2005, 3 ♂; Kozachy I. at Dnipro, 12 km S of Kyiv City, 9.09.2009, 1 ♂; "Sovky hole", humid meadow, 10.09.2000, 31.07.2002, and 27.06.2003, 6 ♂; Zhukiv I. 20 km S of Kyiv, 9.09.2002, 1 ♂; Obolon District: Verbne Lake 31.08.2004, 1 ♂; Podil District: Shevchenko square, humid meadow nr pond, 15.07.2005, 1 ♂. Kyiv Region: Boryspil District: Rozhny village, bog, 16-22.08.1999, 45 ♂, 17 ♀; Kyiv-Sviatoshyn District: Irpin City, 2-4 km E, forest nr bog, 26.04.2003, 2 ♂ (Yu. Verves); Obukhiv District: Kozyn City, Kozynka River coast, bushes, 14.09.2003, 1 ♂; Skvyra District: Pustovarivka village, 26-27.06.2004, 1 ♀ (A. Drozdovska). Ivano-Frankivsk City: 7.07.1966, 1 ♀ (G. Nikitenko). Poltava Region: Pyryatyn District: Kaplyntzi village, humid meadow, 13.07.2009, 1 ♂; Masalske village, meadows at bank of Uday River, 14.08.2010, 1 ♂. Sumy Region: Romny City: banks of Romenka River, meadows and bushes, 21-30.08.2009, 5 ♂, 2 ♀ (Yu. Verves); Serednya Buda District: Desnyansko-Starogutsky National Nature Park, 31.07.2013, 1 ♂ (Yu. Protzenko).

Discussion

The full numbers of sarcophagid species are given in Table 1, including materials of present and last previous (Verves & Khrokalo, 2014) articles. The degree of knowledge of the sarcophagid fauna varies among the oblasts. More than 90% of a presumed number of species are presently known for Cherkasy (103 species), Kyiv Region (98), Kyiv City (90), and the Autonomous of Krym (Crimea) (96). Some more than 50% but less than 90 % of the total are known for Chernihiv (73), Chernivtsi (61), Dnipropetivsk (69) Ivano-Frankivsk (58), Kharkiv (83), Kherson (87), Luhansk (45), Mykolaiv (49), Odesa (57), Poltava (81), Zakarpattya (68) Zaporizhzhya (75), and Zhytomyr (51) Regions. The sarcophagid fauna is poorly studied (not exceeding 50%) in Donetsk (39), Khmelnyzky (29), Kirovograd (38), Lviv (29), Rivne (17), Sumy (45), Ternopil (31), Vinnytsia (31), and Volyn (34) Regions. The quantity of known species from Ukraine (179) includes not less than 90% of real special composition.

References

Adams, C. C., 1915, An outline of the relations of animals to their inland environments. *Bulletin of Illinois Natural History Survey* 11: 1-280.

Adema, H., 1997. An old stump with an entomological surprise. *Natura* 94 (4): 103-104.

Aivazova, G. V. & N. P. Safonova, 1973, On the knowledge of fauna and quantitative dynamic of synanthropic flies in North Osetian SSR. *Collected Zoological Articles*: 107-119, Ordzhonikidze [in Russian].

Akbarzadeh, K., Rafinejad, J., Nozari, J., Rassi, Y., Sedaghat, M. M. & M. Hosseini, 2012, A modified trap for adult sampling of medically important flies (Insecta: Diptera). *Journal of Arthropod-Borne Diseases* 6 (2): 119-128.

Aksoy, H. A. & C. Bahadiroğlu, 2012, Evaluation of some alternative control methods against Mediterranean Corn Borer, *Sesamia nonagrioides* Lefebvre (Lepidoptera: Noctuidae) and European Corn Borer, *Ostrinia nubilalis* Hübner (Lepidoptera: Crambidae). *BEU Journal of Science* 1 (2): 127-136.

Alakhverdyanz, S. A. & N. F. Zakharova, 1961, Studies of sarcophagids for the presence of helminth eggs. *Medical Parasitology and Parasitic Diseases* 30 (3): 360-361 [in Russian].

Aldrich, J. M., 1916, *Sarcophaga and allies in North America*. Entomological Society of America, Thomas Say Foundation, La Fayette, Indiana, Vol. 1, 302 pp. + 16 pls + index.

Aliev, A. R., 1986, Entomophages of main leaf-phagous forest pests of Small Caucasus and Talysh and their protection. *The Problems of Inveronmental Protection in Azerbaijan SSR*: 134-144, Baku [in Russian].

Ali Khan, F. E. A. & Z. Ali Khan, 1974, Two cases of human *Sarcophaga* (Diptera: Sarcophagidae) myiasis in Quebec, with descriptions of the larvae. *Canadian Journal of Zoology* 52 (5): 643-647.

Al-Khalili, N. W. & A. M. Shareef, 1985, Myiasis in a turkey. *Avian Diseases* 29 (4): 1235-1238.

Allen, A. A., 1966, *Sarcophaga* sp. (Dipt., Calliphoridae) in a London suburban garden. *Entomologist's Monthly Magazine* 102 (1229-1331): 228.

Allsopp, P. G., 1978, Seasonal history, hosts and natural enemies of *Monistria discrepans* (Walker) (Orthoptera: Pyrgomorphidae) in south-west Queensland. *Journal of Australian Entomological Society* 17 (1): 65-73.

Al-Misned, F. A. M., 2000, Developmental time, mortality and weight of the immature fleshfly *Bercaea cruentata* (Diptera: Sarcophagidae) larvae exposed to mercury. *Journal of Agricultural Science* 5 (2): 63-67.

Al-Misned, F. A. M., 2003a, Effect of larval media treated with lead on the life cycle of *Bercaea cruentata* (Meigen) (Diptera: Sarcophagidae). *Journal of the Egyptian-German Society of Zoology* 42 (E): 199-213.

Al-Misned, F. A. M., 2003b, Lead accumulation and elimination during metamorphosis of *Bercaea cruentata* (Meigen) (Diptera: Sarcophagidae). *Saudi Journal of Biological Sciences* 10 (1): 32-41.

Al-Misned, F. A. M. & S. S. M. Abou Fannah, 2000, Development rate and mortality of immature *Bercaea cruentata* (Meigen) (Diptera: Sarcophagidae) at constant laboratory temperatures. *Pakistan Journal of Zoology* 32: 151-155.

Al-Misned, F. A. M., Kelany, I. M. & S. S. M. Abou-Fannah, 1999, Effect of larval flood weight as a limiting factor on some biological aspects of *Bercaea cruentata* (Meigen) (Diptera: Sarcophagidae). *Annals of Agricultural Science, Moshtohor Journal* 37 (1): 721-730.

Aloke, P., Roy, P. & B. Dasgupta, 1989, Sarcosaprophagous flies (Diptera: Calliphoridae, Muscidae and Sarcophagidae) in the urban, rural and forest areas of Japlaiguri district, West Bengal, India. *Journal of Bengal Natural History Society* 8 (2): 36-53.

Alwar, V. S. & S. Seshiah, 1958, Studies on the life-history and bionomics of *Sarcophaga dux* Thomson, 1868. *Indian Veterinary Journal* 35: 559-565.

Ameen, M. & M. F. Huq, 1973, Fifth inhabiting flies of Dacca city. *Journal of Natural History* 7: 633-652.

Amené, C. & C. G. Vajime, 1990, Parasites, parasitoids and predators of *Oedaleus senegalensis* Krauss (Orthoptera: Acrididae) in Nigeria. *Insect Science and its Application* 11: 27-34.

Anderson, G. S. & S. L. VanLaerhoven, 1996, Initial studies on insect succession on carrion in southwestern British Columbia. *Journal of Forensic Sciences* 41 (4): 617-625.

Anil, S., Jacob, O. A. & S. Hari, 1989, Oral myiasis: A case report. *Annals of Dentistry* 48 (2): 28-30.

Aradi, M. P. & F. Mihályi, 1971, Seasonal investigations of flies visiting flood markets in Budapest. *Acta zoologica hungarica* 17 (1-2): 1-10.

Armand, P. & T.-O. Agnés, 2005, Ecological study of populations of *Zonocerus variegatus* (L.) with special reference to natural enemies in Benin. *Abstract of Annual Meeting of American Ecological Society*, Montreal, 2005. Electron version.

Arribas, O. J. & Galán, P., 2005. Reproductive characteristics of the Pyreneanhigh-mountain lizards: *Iberolacerta aranica* (Arribas, 1993), *I. aurelioi* (Arribas, 1994) and *I. bonnali* (Lantz, 1927). *Animal Biology* 55 (2): 163-190.

Artamonov, S. D., 1978, Sarcophagids (Diptera, Sarcophagidae) of Kunashir Island. *Transcations of Soil Biology Institute* 50 (153): 153-157, Vladivostok [in Russian with English subtitle].

Artamonov, S. D., 1983, Biology of mass species of sarcophagid flies – the consumers of putrid wood in Southern Primorye. In: L. S. Kulikova (ed.), *Fauna and Ecology of Insects of the Soviet Far East*: 11-21, Vladivostok [in Russian with English subtitle].

Artamonov, S. D., 1985, Predaceous and parasitic sarcophagids (Diptera, Sarcophagidae) from south of [Soviet] Far East. In: L. S. Kulikova (ed.), *Fauna and Ecology of Insects of Primorye: Pests and Entomophags*: 11-24, Vladivostok [in Russian with English summary].

Artamonov, S. D., 1987, The grey flesh flies (Fam. Sarcophagidae). In: R. G. Soboleva (ed.). *Insects and Mites of the Far East, with Medical-Veterinary Importance*: 102-119, Leningrad [in Russian with English subtitle].

Artamonov, S. D., 1988, Sarcophagids (Diptera, Sarcophagidae) of Ussuriysk Reserve. *The Role of Insects in Biocoenoses of the Soviet Far East*: 26-34, Vladivostok [in Russian with English subtitle].

Artamonov, S. D., 1992, The peculiarities of the exploitation of flood resources by two-winged flies from family Sarcophagidae (Insecta: Diptera) in the conditions of the Far East Region. *Animal and Plant World of the Far East* 1: 43-54, Vladivostok [in Russian].

Artamonov, S. D., 1993, Sarcophagids (Diptera, Sarcophagidae) of the Lower Amur. *Biological Investigations at Mountain Taiga Station* 1: 222-228, Ussuriysk [in Russian].

Artamonov, S. D., 1996, A review of species of genera *Bellieriomima* Rohd., *Pierretia* R.-D. and *Arachnidomyia* (Diptera: Sarcophagidae, Sarcophaginae) of the Far East of Russia. *Biological Investigations at Mountain Taiga Station* 3: 160-169, Ussuriysk [in Russian].

Arthur, A. P. & H. S. Coppel, 1953, Studies on dipterous parasites of the spruce budworm, *Choristoneura fumiferana* (Clem.) (Lepidoptera: Tortricidae) I. *Sarcophaga aldrichi* Park. (Diptera: Sarcophagidae). *Canadian Journal of Zoology* 31 (4): 374-391.

Aslan, A. & H. Çalışkan, 2009, Fauna of Eskişehir Sarcophagidae (Insecta, Diptera), and new records for Turkey. *Sakarya Üniversitesi Fen Edebiyat Dergisi* 11 (2): 15-27 [in Turkish with English summary].

Aspöck, H. & I. Leodolter, 1970, Vaginale Myiasis durch *Sarcophaga argyrostoma* (Rob.-Desvoidy). *Wiener klinische Wochenschrift* 82 (27-28): 518-521.

Audcent, H. L. F., 1942, A preliminary list of the hosts of some British Tachinidae (Dipt.). *Transactions of the Society for British Entomology* 8 (1): 1-42.

Babenko, Z. S. & V. M. Pospelova, 1972, The bird cherry moth (*Yponomeuta evonymellus* L.) in forest zone of Ob' Region. *Transcations of Institute for Biology and Biophysic* 2: 45-51, Tomsk [in Russian].

Baer, W., 1921, Die Tachinen als Schmarotzer der schaedlichen Insekten. Ihre Lebensweise, wirtschaftliche Bedeutung und systematische Kennzeichnung. *Zeitschrift für angewandte Entomologie* 6: 185-246; 7: 97-163, 349-423.

Baer, W., 1922, Die Tachinen als Schmarotzer der schaedlichen Insekten. Ihre Lebensweise, wirtschaftliche Bedeutung und systematische Kennzeichnung. *Zeitschrift für angewandte Entomologie* 7: 97-163

Baker, G. L., 1975, The migratory locust outbreak in the Markham and Ramu Valleys, 1973-1975. *Bubio Information Bulletin* 15: 1-8.

Baker, G. L., 1978, The biology of a species of *Doleschalla* (Diptera: Tachinidae), a parasite of *Pantorhytes szentivanyi* (Coleoptera: Curculionidae). *Pacific Insects* 19 (1-2): 53-64.

Baker, G. L., 1995, Larval development of *Blaesoxipha pachytyli* (Skuse) (Diptera: Sarcophagidae), a parasite of grasshoppers and locusts (Orthoptera: Acrididae) in Australasia. *Journal of the Australian Entomological Society* 34 (2): 129-133.

Baker, G. L. & I. Barchia, 1997, Effect of insecticide usage on parasitism of *Chortoicetes terminifera* (Walker) (Orthoptera: Acrididae). *Australian Journal of Entomology* 36 (3): 293-298.

Baker, G. L., Brown, G. R. & R. Pigott, 1982, *Dirhrinis ruficornis* (Chalcididae: Dirhininae), a parasite of Diptera, two of which are primary parasites of Orthoptera. *Australian Entomological Magazine* 9 (2-3): 27-31.

Bale, J.-S., 1987, Insect cold hardiness: freezing and super-cooling – an ecophysiological perspective. *Journal of Insect Physiology* 33: 899-908.

Balotnikova, V. V., 1971, The entomophags of Apple Moth in conditions of Belarus. *Transactions of Academy of Sciences of Belarus SSR. Serie of Agricultural Sciences* (1): 78-83 [in Belorussian with English subtitle].

Balotnikova, V. V., 1972, Parasitic dipterans of Apple Moth (*Hyponomeuta malinella* Zell.) in conditions of Belarus. *Transactions of Academy of Sciences of Belarus SSR. Serie of Agricultural Sciences* (4): 63-65, 136 [in Belorussian with English subtitle].

Balotnikova, V. V., Moiseenko, A. I. & N. N. Kolyadko, 1976, Parasitic tachinids in fruit gardens. *Plant Protection* (1): 94-100, Minsk [in Russian].

Bang, F. B. & R. W. Glaser, 1943, The persistence of poliomyelitis virus in flies. *American Journal of the Hygiene* 37: 320-324.

Bänziger, H. & T. Pape, 2004, Flowers, faeces and cadavers: natural feeding and laying habits of flesh flies in Thailand (Diptera: Sarcophagidae, *Sarcophaga* spp.). *Journal of Natural History* 38: 1677-1694.

Baranoff, N. & N. J. Jezic, 1928, Fliegenmaden als Wundscharotzer bei den Haustiere in Südserbien. *Zeitschrift für Parasitenkunde* 1: 416-422.

Baranov, N., 1924, Fly parasite (*Blaesoxyphe lineata*) of *Dociostaurus maroccanus*. *Glasnik Ministarstva Poljoprivrede i Voda* 2 (7): 40-52. Belgrad.

Baranov, N., 1925, Moroccan grasshopper (*Dociostaurus maroccanus* Thunb.) in Montenegro. Protection of Plants against Pests 1 (6): 217-218. Leningrad [in Russian].

Baranov, N., 1927, Die serbischen Blaesoxiphen (Dipt., Tach.). *Neue Beiträge zur systematische Insektenkunde* 4 (1-2): 9-15.

Baranov, N., 1942, Sarcophagen in Unabhängigen Staate Kroatien. *Veterinarski Arhiv* 12 (12): 497-659 [in Serbian with German summary].

Barfoot, S. D., 1969, *Sarcophaga nigriventris* Meigen and *S. hirticrus* Pandellé (Dipt., Calliphoridae) both bred from *Cantareus aspersus* Müller (Mollusca, Helicidae). *Entomologist's Monthly Magazine* 105: 144.

Barratt, B. I. P., Ferguson, C. M., Heath, A. C. G. & R. A. S. Logan, 2001, Relative abundance and seasonality of Calliphoridae and Sarcophagidae (Diptera), potential vectors of rabbit haemorrhagic disease virus (RHDV) in the South Island of New Zealand. *New Zealand Journal of Zoology* 28 (4): 417-428.

Barsacq, J., 2013, The gipsy moth. *Revue de phytopathologique appliquée* 1 (5): 20-63.

Battu, G. S., 1977, Occurrence of *Parasarcophaga misera* (Walker) and *Campoletis* sp. as parasites of *Spodoptera litura* (Fabricius) from India. *Current Science* 46 (16): 568-569.

Battu, G. S. & V. K. Dilawari, 1978, Preliminary investigations on the safety evaluation of *Spodoptera litura* (Fabricius). Nuclear polyhedrosis virus (SLNPV) against a parasitoid, *Parasarcophaga misera* (Walker). *Entomologists' Newsletter* 8 (1-2): 6.

Baudet, J. L., 1985, Particularités morphologiques et fonctionnelles du chorion des oeufs de *Sarcophaga* (insectes, diptères), en relation avec l'ovoviparité. *Bulletin de la Société des Sciences Naturelles de l'Ouest de la France* (N. S.) 7 (4): 176-184.

Beaver, R. A., 1969, Anthomyiid and muscid flies bred from snails. *Entomologist's Monthly Magazine* 105: 25-26.

Beaver, R. A., 1972, Ecological studies on Diptera breeding in dead snails. I. Biology of the species found in *Cepaea nemoralis* (L.). *The Entomologist* 105: 41-52.

Beaver, R. A., 1973, The effects of larval competition on puparial size in *Sarcophaga* spp. (Diptera, Sarcophagidae) breeding in dead snails. *Proceedings of the Royal Entomological Society of London* (Ser. A) 48 (1): 1-9.

Beaver, R. A., 1977, Non-equilibrium "island" communities: Diptera breeding in dead snails. *Journal of Animal Ecology* 46: 783-789.

Beaver, R. A., 1986, Biological studies of muscoid flies (Diptera) breeding in mollusk carrion in Southeast Asia. *Japanese Journal of Sanitary Zoology* 37 (3): 205-211.

Belov, A. N. & N. B. Panina, 1985, The distribution of gypsy moth and its entomophages in space during the fluctuations of quantity of population. *Transactions of Timiryazev Agrarian Academy* (2): 111-119 [in Russian].

Benecke, M., 1998, Rechtsmedizinisch angewandte kerb- und spinnentierkundliche Begutachtungen in Europa: eine kurze Über Sicht über Ursprünge und den aktuellen Stand der Forschung. *Rechtsmedizin* 8: 153-155.

Bengtsson, S., 1902, Biological investigations on the nun (*Lymantria monacha* Linn.). Its parasites and diseases. *Uppsatser i Praktisk Entomologi* 12: 65-136 [in Swedish].

Berner, L., 1960, Les myias des Hélicidés. *Bulletin de la Société d'histoie naturelle de Doubs* 62 (1): 9-12.

Berner, L., 1973, Sur le parasitisme des Hélicidés par des mouches du genre *Sarcophaga*. *Bulletin de la Muséum d'histoie naturelle de Marseille* 33: 87-94.

Bernotiene, R., (managing editor), et al., 2006, *New and rare for Lithuania insect species records and descriptions*, Vol. 18, 159 pp. Lithuanian Entomological Society, Vilnius.

Bezzi, M., 1921, Ditteri di cirenaica raccolti dal Prof. Alessandro Ghigi durante l'escursione organizzata dal touring club italiano nel mese d'aprile 1920. *Atti della Società Italiana di Scienze Naturali e Del Museo Civico di Storia Naturale in Milano* 60: 1-12.

Bilanovsky, I. D., 1931, Materials on the fauna of tachinid flies of former Kyiv Government. *Transactions of Natural and Tekhnik Sciences Branch of General Ukrainian Academy of Sciences* (5): 17-42 + 2 pls. [in Ukrainian with German summary].

Bilanovsky, I. D., 1936, Notizen über die Biologie und wirtschaftliche Bedeutung einiger Zweiflügler. *Transactions of Zoological Museum* 17: 59-61, Kyiv [in Ukrainian with German summary].

Bilanovsky, I. D., 1938, Biologische Faktoren, welche während 1934-1936 die Vermehrung der Apfelbaumgespinstmotte in Kiewer Gebiet beschänkten. *Transactions of Zoological Museum* 21-22: 153-166, Kyiv [in Ukrainian with German summary].

Biliotti, E., 1958, Les parasites et prédateurs de *Thaumetopoea pityocampa* Schiff. (Lepidoptera). *Entomophaga* 3 (1): 23-34.

Birg, A. V., 1971, Ecological and faunistic review of flies of human settlements and their neighbouring territories of Belarus. *Belovezhskaya Pushcha* 4: 212-230, Minsk [in Russian].

Blackith, R. E. & R. M. Blackith, 1990, Insect infestations in small corpses. *Journal of Natural History* 24: 699-709.

Blackith, R. E., Blackith, R. M. & J. P. O'Connor, 1994, A check-list of Irish flesh-flies (Diptera: Sarcophagidae: Sarcophagini) and their known distribution. *The Irish Naturalist's Journal* 24 (11): 427-434.

Blackith, R. M. & R. E. Blackith, 1988, Sarcophagini from northern Sulawesi (Indonesia), including four new species (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 39 (3): 301-311.

Blanchard, E. E., 1933, Parasitos mas importante de la langosta ("*Schistocerca paranensis*" Burm.) en la Republica Argentina. *Boletín del Ministerio de agricultura de la nación* 34: 247-266, Buenos Aires.

Blunck, H. & H. Wilbert, 1962, Der Baumweissling *Aporia crataegi* (L.) (Lep., Pieridae) und sein Massenwechsel. *Zeitschrift für Angewandte Entomologie* 50: 166-221.

Böttcher, G., 1912, Die männlichen Begattungswerkzeude bei dem Genus *Sarcophaga* Meig. und ihre Bedeutung für die Abgrenzung der Arten. *Deutsche entomologische Zeitschrift* (6): 705-736.

Böttcher, G., 1913, Die männlichen Begattungswerkzeude bei dem Genus *Sarcophaga* Meig. und ihre Bedeutung für die Abgrenzung der Arten. *Deutsche entomologische Zeitschrift* (4): 351-377.

Bogush, P. P., 1959, Materials on the parasitic insects of Turkmenia. *Zoologicheskiy Zhurnal* 38 (2): 189-195 [in Russian with English summary].

Bohart, G. E. & J. L. Gressitt, 1951, Filth-inhabiting flies of Guam. *Bulletin of Bernice P. Bishop Museum* 204: i-vii, 1-152, 17 pls.

Boldaruev, V. O., 1952, The parasites of Siberian Moth (*Dendrolimus sibiricus* Tschetv.) in Eastern Siberia. *Entomologicheskoe Obozrenie* 32: 56-68 [in Russian].

Boldaruev, V. O., 1959, The Siberian Moth and its parasites in the fir-tree forests of the Krasnoyarsk Region. *Zoologicheskiy Zhurnal* 38 (7): 1042-1048 [in Russian with English subtitle].

Bonacci, T., Greco, S., Cavalcanti, B., Brandmayr P. & V. Vercillo, 2014, The flesh fly *Sarcophaga (Liopygia) crassipalpis* Macquart 1839 as an invader of a corpse in Calabria (Southern Italy). *Journal of Forensic Science and Criminology* 1 (4): 1-5.

Borisova, V. I., 1983, On the knowledge of mechanisms, which regulated the quantity of parasites in nature. *Terrestrial and Aquatic Ecosystems* (6): 55-58. Moscow [in Russian with English subtitle].

Bowell, E. W., 1917, Larva of a dipterous fly on *Helicella itala*. *Proceedings of the Malacological Society of London* 12: 308.

Braverman, I., Dano, I., Saah, D. & B. Gapany, 1994, Aural myiasis caused by flesh fly larva, *Sarcophaga haemorrhoidalis*. *Journal of Otolaryngology* 23 (3): 204-205.

Burgess, I. & P. D. R. Spraggs, 1992, Myiasis due to *Parasarcophaga argyrostoma* - first recorded case in Britain. *Clinical and Experimental Dermatology* 17 (4): 261-263.

Burnett, J. W., 1990, Myiasis. *Cutis* 46 (1): 51-52.

Buxton, P. A., 1929, Sarcophagidae. *Insects of Samoa and Others Terrestrial Arthropoda* 6 (3): 141-150, London.

Calero, M. C., 1948, Cutaneous myiasis in Panama. *Journal of Parasitology* 34 (4): 343-344.

Callan, E. McC., 1937, A note on some Hymenoptera and Diptera bred from a dead cricket bat willow. *Journal of the Society for British Entomology* 1: 193-194.

Callot, J., 1935, Première note sur les parasites des sauterelles à Richelieu (Indre-et-Loire). *Annales de Parasitologie humaine et comparée* 13: 193-202.

Cameron, R. A. D. & R. H. L. Disney, 1975, Two further cases of parasitism by *Sarcophaga nigriventris* Meigen (Diptera, Sarcophagidae). *The Entomologist's Monthly Magazine* 111 (3): 45.

Čápek, M. & J. Čepelák, 1970, List of parasites brought up from insectean pests. Part IV. Tachinidae and Sarcophagidae (Diptera). *Polnohospodárstvo* 16 (3): 254-268.

Carvalho, C. J. B. de & C. A. Mello-Patiu, de, 2008, Key to the adults of the most common forensic species of Diptera in South America. *Revista Brasiliera de Entomologia* 52 (3): 390-406.

Casanova-Roman, M., Sanchez-Legaza, E., Sanchez-Porto, A. & C. Murga, 2010, Aural myiasis in an infant. *Le Infezioni in Medicina* 18 (3): 175-176.

Castillo Mirables, M., 2002, Estudio de la entomofauna asociada a cadáveres en el Alto Aragón (España). *Monografias de la Sociedad Entomológica Aragonesa* 6: 1-94.

Castro, C. B., Garcia, M. D., Arnaldos, M. I. & D. González-Mora, 2010, Sarcophagidae (Diptera) attracted to piglet carcasses including new records for Portuguese fauna. *Graellsia* 66: 285-294.

Čepelák, J., 1952, 1^{re} contribution a la connaissance des tachinaires tscheques. *Časopis České společnosti entomologické* 49: 81-87.

Čepelák, J., 1956, Neue Erkenntnisse über die slowakischen Fleischfliegen der Gattung *Sarcophaga* Meigen (Diptera - Calliphoridae). *Biológia* 11: 677-689.

Čepelák, J. & M. Slamečková, 1986, Sarcophagidae. In: J. Cepelak (ed.), *Diptera Slovenska* 2: 260-276, 407-411, Veda, Bratislava.

Cerruti, T., 1913a, Miasis del oido. La *Sarcophaga nurus* nueva productora de miasis. *Anales de la Sociedad Argentina de Otorrinolaringología* 2: 64-68.

Cerruti, T., 1913b, Miasis del oido, la *Sarcophaga nurus*, nueva mosca produtora de miasis. *Revista medica del Rosario* 3 (4): 199-203.

Chaboussou, F., Roehrich, R. & V. Labeyrie, 1949, Regression de la population de criquet migrateur (*Locusta migratoria gallica* Remaudiere) dans les Landes de Gascogne en 1948. *Comptes Rendus des Séances Académie d'Agriculture de France* 35: 460-463.

Chapman, R. F. & W. W. Page, 1979, Factors affecting the mortality of the grasshopper, *Zonocerus variegatus*, in southern Nigeria. *Journal of Animal Ecology* 48 (1): 271-288.

Chapman, R. F., Page, W. W. & A. R. McCaffery, 1986, Bionomics of the variegated grasshopper (*Zonocerus variegatus*) in West and Central Africa. *Annual Review of Entomology* 31: 479-505.

Charykuliev, D. M., 1965, On the fauna and distribution of Sarcophagidae of the lower Murghab. *Insects of the Lower Murgab*: 123-146, Ashkhabad [in Russian with English subtitle].

Charykuliev, D. M., 1976, Studies of flies of the family Sarcophagidae (Diptera) from foothill and mountain areas of the central Kopet Dagh. In: A. O. Tashliev (ed.), *Ecology and Economic Importance of Insects of Turkmenia*: 102-116, Ashkhabad [in Russian with English subtitle].

Charykuliev, D. M. & M. G. Nepesova, 1972, On parasitism of sarcophagid flies in darkling beetles. *Transactions of Academy of Sciences Turkmenian SSR. Series of Biological Sciences* (5): 71-73 [in Russian with English subtitle].

Cherix, D., Wyss, C. & T. Pape, 2012, Occurrences of flesh flies (Diptera: Sarcophagidae) on human cadavers in Switzerland, and their importance as forensic indicators. *Forensic Science International* 220 (1): 158-163.

Chigusa, Y., Kawai, S., Kirinoki, M., Matsuda, H. & K. Morita, 1997, A case of myiasis due to *Sarcophaga melanura* in a patient suffering from pontine infarction. *Medical Entomology and Zoology* 48 (2): 141-143.

Chigusa, Y., Tanaka, K., Yokoi, H., Matsuda, Y., Sasakai, Y., Ikadatsu, Y. & K. Baba, 1994, Two cases of otomyiasis caused by *Sarcophaga peregrina* and *S. similis* (Diptera: Sarcophagidae). *Japanese Journal of Sanitary Zoology* 45: 153-157.

Chin, H. C., Ahmad, N. W., Kian, C. W., Kurahashi, H., Jeffery, J., Kiang, H. S. & B. Omar, 2010, A study of cow dung Diptera in Sentul Timur, Kuala Lumpur, Malaysia. *Journal of Tropical Medicine and Parasitology* 33: 53-61.

Chong, M., 1968, Notes and exhibitions: releases of beneficial insects. *Proceedings of the Hawaiian Entomological Society* 20 (1): 3.

Clausen, C. P., 1978, Introduced parasites and predators of arthropod pests and weeds. *Agricultural handbook, U.S. Department of Agriculture* (480): i- vi + 1-545.

Clemons, L., 1998, *Blaesoxiphia plumicornis* (Zett.) (Dipt.: Sarcophagidae) apparently new to Kent. *Entomologist's Record and Journal of Variation* 110 (3-4): 91.

Clemons, L., 2002, Further records of *Blaesoxiphia plumicornis* (Zett.) (Dipt.: Sarcophagidae) in Kent. *Entomologist's Record and Journal of Variation* 114 (4): 172.

Colin, M.-E., 2012, Mouches à miel et mouches parasites: une relation qui ne date pas d'aujourd'hui. *Abailles et Fleurs* (735): 1 - 2.

Common, I. F. B., 1948, The yellow-winged locust, *Gastrimargus musicus* Fabr. in central Queensland. *Queensland's Journal of Agricultural Science* 5: 153-219.

Coulson, J. R., Fuerter, R. W., Schaefer, P. W., Ertle, L. R., Kellener, J. S. & L. D. Roads, 1986, Exploration for and imputation on natural enemies of the gypsy moth, *Lymantria dispar* (L.) (Lepidoptera: Lymantriidae) in North America: an update. *Proceedings of the Entomological Society of Washington* 88 (3): 461-475.

Coupland, J. B., 1994, Diptera associated with snails collected in South-Western and West-Mediterranean Europe. *Vertigo* 3: 19-25.

Coupland, J. B. & G. M. Baker, 2004, Diptera as predators and parasitoids of terrestrial gastropods, with emphasis on Phoridae, Calliphoridae, Sarcophagidae, Muscidae and Fanniidae. In: G. M. Barker (ed.), *Natural Enemies of Terrestrial Mollusks*: 85-158. CABI Publishing, Wallingford.

Cuthbertson, A., 1934, Biological notes on some Diptera in Southern Rhodesia. *Proceedings of the Rhodesian Scientific Association* 33: 32-50.

Cuthbertson, A., 1935, Biological notes on some Diptera in Southern Rhodesia. *Occasional Papers of the Rhodesian Museum* 4: 11-28.

Cutrupi, V., Lovisi, A., Bernardi, A. & A. Meggio, 1986, Miasi, considerazioni su di un caso. *Rivista di Parassitologia* 47 (3): 185-188.

Das, S. K. & B. Dasgupta, 1986, Observations of certain stages of development of three species of *Sarcophaga* (Sarcophagidae: Diptera) in laboratory condition in Calcutta, India. *Journal of Bengal Natural History Society* (N. S.) 5 (1): 43-54.

Davis, C. J., 1971, Recent introductions for biological control in Hawaii XVI. *Proceedings of Hawaiian Entomological Society* 21: 59-62.

De Gregorio, R., 1982, Etude au Togo, de la bio-écologie du criquet puant: *Zonocerus variegatus* (Orthoptera). 2. Cycle évolutif à Atigba (Région des plateaux). *Bulletin de la Société entomologique de France* 87 (7-8): 245-255.

Delassus, M., 1925, Une invasion de *Decticus albifrons* Fab. dans la Région de Maillot. *Revue de Pathologie végétale et de Entomologie agricole de France* 12 (1): 38-39.

Dempster, J. P., 1957, The population dynamics of the Moroccan locust (*Dociostaurus maroccanus* Thunberg) in Cyprus. *Anti-Locust Bulletin* 27: 1-60.

Desmyter, S. & M. Gosselin, 2009, COI sequence variability between Chrysomyinae of forensic interest. *Forensic Science International. Genetics* 3: 89-95.

Denno, R. F. & W. R. Cothran, 1975, Niche relationships of a guild of necrophagous flies. *Annals of Entomological Society of America* 68 (4): 741-754.

Di Fazio, A., Campobasso, C. P. & F. Introna, 1998, Three case studies in forensic entomology from Southern Italy. *ASTM International* 43 (1): 1-5.

Diaz, L. A. & P. E. Kaufman, 2011, A flesh fly *Sarcophaga crassipalpis* Macquart (Insecta: Diptera: Sarcophagidae). *Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Flood and Agricultural Sciences, University of Florida, Document EENY503*: 1-6.

Dijkerman, H. J., 1990, *Parasitoids of small ermine moths (Lepidoptera, Yponomeutidae)*. Published by the author, Leiden. 162 pp.

Dik, B., Uslu, U. & N. Işık, 2012, Myiasis in animals and humanbeings in Turkey. *Journal of the Faculty of Veterinary Medicine, Kafkas University* 18 (1): 37-42.

Draber-Mońko, A., 1973, Übersicht der einheimischen Arten der Familie Sarcophagidae (Diptera). *Fragmenta faunistica* 19 (9): 157-225.

Draber-Mońko, Á., 1997, *Protocalliphora azurea* (Fall.) (Diptera, Calliphoridae) and other insects found in nests of sparrows, *Passer domesticus* (L.) and *Passer montanus* (L.) in the vicinity of Warsaw. *International Studies of Sparrows* 22-23: 1-10.

Draber-Mońko, A., 2007, Sarcophagidae: 231–233, In: W. Bogdanowicz, E. Chudzicka, I. Pilipiuk & E. Skibińska (eds). *Fauna of Poland. Characteristics and Checklist of Species*. Vol. 2. Diptera. 505 pp. Warszawa.

Draber-Mońko, A., 1995, Selected Calyprata (Diptera) of the pine forests of the Berezinsky Biosphere Reserve in Belarusia. *Fragmenta faunistica* 38 (7): 163-179.

Drensky, P., 1957, Composition and distribution of the fly fam. Sarcophagidae in Bulgaria. *Bulletin de l'Institut de Zoologie et Musée* 6: 199-231.

Droma, E. B., Wilamowski, A., Schnur, H., Yarom, N., Scheuer, E. & E. Schwartz, 2007, Oral myiasis: a case report and literature review. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology and Endodontology* 103 (1): 92-96.

Dumcius, O. & S. Pakalniskis, 2006, A contribution to the list of Lithuanian dipteran fauna. *New and Rare for Lithuania Insect Species* 17: 48–56.

Dunk, K., 1995, Bemerkenswerte Vorkommen von Fliegenarten in Bereich der Sandgebiete im Regnitztal Mittel- und Oberfrankens (Insecta: Diptera). *Beiträge zur bayerischen Entomofaunistik* 1: 33-46.

Dutto, M. & M. Bertero, 2010, Traumatic myiasis from *Sarcophaga (Bercea) cruentata* Meigen, 1826 (Diptera, Sarcophagidae) in a hospital environment: Reporting of a clinical case following polytrauma. *Journal of Preventive Medicine and Hygiene* 51 (1): 50-52.

Dyadechko, N. P., 1959, The intra-areal migrations of parasites for biological control of *Stilpnotia salicis* L. *Transcations of Ukrainian Plant Protection Institute* 8: 205-209 [in Russian].

Eads, R. B., 1979, Notes on muscoid Diptera of public health interest. *Mosquito News* 39 (3): 674-675.

Eberhardt, A.-I., 1954, *Sarcophaga carnaria* als obligatorischer Regenwurmparasit. *Naturwissenschaften* 41 (18): 436.

Eberhardt, A.-I., 1955, Untersuchungen über das Schmarotzen von *Sarcophaga carnaria* an Regenwürmern und Vergleich der Biologie einiger *Sarcophaga* Arten. *Zeitschrift für Morphologie und Ökologie der Tiere* 43: 616-647.

Eberhardt, A.-I. & G. Steiner, 1952, Untersuchungen über das Schmarotzen von *Sarcophaga* spp. in Regenwürmern. *Zeitschrift für Morphologie und Ökologie der Tiere* 41: 147-160.

Egorov, N. N., 1962, On the biology of *Pygaera anastomosis* L. (Lepidoptera, Notodontidae). *Entomologicheskoe Obozrenie* 41: 294-299 [in Russian with English subtitle].

Eicher, W., 1937, Vogelnester und Vorratsschädinge. *Mitteilungen der Gesellschaft für Vorratsschutz* 13 (5): 42-49, 61-64.

El-Shazly, M. M., El-Sherif, H. A. & H. Omar, 1995, A comparative study on the reproductive strategies of a larviparous and an oviparous fly associated with carrion. *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 68: 323-330.

Emden, F. J. van, 1950, Dipterous parasites of Coleoptera. *Entomologist's Monthly Magazine* 86: 182-206.

Emden, F. J. van, 1954, Diptera: Cyclorrhapha Calyprata (I). Section (a). Tachinidae and Calliphoridae. Handbooks for the identification of British insects. *Proceedings of the Royal Entomological Society of London* (B) 10 (4) (a): 1-133.

Enderlein, G., 1933, Neue paläarktische Calliphoriden, darunter Schneckenparasiten (Dipt.). *Mitteilungen der Deutschen entomologischen Gesellschaft* 4: 120-128.

Entin, L. I., 1971, *Dendrolimus pini* and its parasites in the conditions of Eastern Polesye. *Transactions of Bielorussian Forestry Institute* 20: 108-114 [in Russian].

Faucher, J. & D. Cherix, 1998, Contribution à la connaissance des Diptères nécrophages du Jorat (Vaud, Suisse). *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 71 (1-2): 211-217.

Farrow, R. A. 1982, Population dynamics of the Australian plague locust, *Chortoicetes terminifera* (Walker) in central western New South Wales. II. Factors influencing natality and survival. *Australian Journal of Zoology* 30 (2): 199-222.

Fawzy, A. F., 1991, Otitis media and aural myiasis. *Journal of Egyptian Society of Parasitology* 21 (3): 883-885.

Fedotova, K. M., 1950, Role of parasites and entomophagous birds in the control of reproduction of *Aporia crataegi*. *Proceedings of Institute for Entomology and Phytopathology* 2: 254, Kyiv.

Feng, Y., 2006, Vertical distribution of geography of calypratae flies in mountain Erlangshan, Sichuan Province, China. *Sichuan Journal of Zoology* 23 (3): 493-498 [in Chinese with English summary].

Feng, Y., 2011, Survey of Calypratae flies from Erlang Mountain area in Sichuan. *Sichuan Journal of Zoology* 30 (4): 544-551 [in Chinese with English summary].

Feng, Y., Liu, G.-I., Yang, S.-b. & P. Shi, 1990, Studies on the breeding places of flies in Ya'an prefecture in Sichuan Province, China. *Acta entomologica sinica* 31 (1): 53-63 [in Chinese with English summary].

Ferrar, P., 1987, *A guide to the breeding habits and immature stages of Diptera Cyclorrhapha*. Entomograph 8. Brill/Scandinavian Science Press. Leiden. 907 pp.

Finch, S., 2005, The parasitoid complex and parasitoid-induced mortality of spiders (Araneae) in a Central European woodland. *Journal of Natural History* 39 (25): 2339-2354

Fremdt, H. & J. Amendt, 2014, Species composition of forensically important blow flies (Diptera: Calliphoridae) and flesh flies (Diptera: Sarcophagidae) through space and time. *Forensic Science International* 236C: 1-9.

Frost, C. L., Braig, H. R., Amendt, J. & M. A. Perotti, 2010, Chapter 6. *Indoor arthropods of forensic importance: insects associated with indoor decomposition and mites as indoor markers*, pp. 93-108. In: Amendt J, Campobasso, C. P., Goff, M. L. & M. Grassberger (eds), *Current Concepts in Forensic Entomology*. Springer Science + Business Media B. V.; Dordrecht, Heidelberg, London, New York, 2010, vii + 376 pp.

Gadzhey, E. F., 1963, Synanthropic flies of mountain regions of Tajikistan. *Reports of Tajikistan Academy of Sciences. Branch of Agricultural and Biological Sciences* 1 (2): 90-98 [in Russian with English subtitle].

Gaponov, S. P., 1995, Myiasis in Central Russia. *Oistros* 3: 4.

Gassner, F. X., 1944a, Parasitism and its effects on foxes. *National Fur News* 16 (3): 3, 17-18.

Gassner, F. X., 1944b, Parasitism and its effects on foxes. *Fur Trade Journal of Canada* 21 (9): 8-9, 32-33, 36, 38.

Gerlach, J., Lawrence, J. M. & L. Canning, 2005, Mortality, population changes and exceptional behaviour in a giant millipede. *Phelsuma* 13: 86-93.

Gimingham, C. T., 1922, Notes on some parasites of beetles. *Entomologist's Monthly Magazine* 58: 226-228.

Girfanova, L. N., 1957, Dipterous entomophages and their role in lowering of quantity of gypsy moth in Bashkiria. *Transactions of Eastern Branch of Academy of Sciences USSR* (9): 102-109 [in Russian].

Girfanova, L. N., 1958, On the fauna of parasitic and predatory Diptera of Bashkiria. *Investigations of the Focus of Forest Pests in Bashkiria* 1: 46-56, Ufa [in Russian].

Girfanova, L. N., 1962, Morphological peculiarities of mature larvae of sarcophagid flies (Diptera, Sarcophagidae) parasitized in gypsy moth pupae. *Investigations of the Focus of Forest Pests in Bashkiria* 2: 117-122, Ufa [in Russian].

Girfanova, L. N. & N. T. Idrisova, 1977, The materials on entomophages of Siberian moth in Bashkiria. *Materials on the Fauna and Ecology of Animals of South Ural*. - VINITI N 4549-77 Dep.: 65-75 [in Russian].

Giroux, M. & T. Wheeler, 2010, Systematics of *Bulbostyla*, a new subgenus of *Sarcophaga* Meigen, and change of status for *Robackina* Lopes (Diptera: Sarcophagidae). *Zootaxa* 2553: 35-59.

Gorbacheva, Z. A., 1956, The special composition of flies of Tashkent city and a life calendar of some of them. *Transactions of Academy of Sciences Uzbek SSR. Serie of Biological Sciences* (3): 73-79 [in Russian].

Gözüaçik, C. & C. Mart, 2009, Determination of natural parasitization rates of some pests of Lepidoptera larvae in corn (*Zea mays* L.) in the Southeastern Anatolia Region. *Bitki Koruma Bülteni* 49 (3): 107-116.

Grabovetzka, O. A. 2010, Flowering, pollination and reproductive capacities *Asimina triloba* (L.) Dunal in the south steppe of Ukraine. *News of Biosphere Reserve "Askania Nova"* 12: 123-129.

Granz, W., Schneider, D. & H. Schumann, 1975, Myiasis bei Menschen in Mitteleuropa. *Zeitschrift für gesammte innere Medizin* 30 (8): 293-301.

Grassberger, M. & C. Frank, 2004, Initial study of arthropod succession on pig carrion in a Central European urban habitat. *Journal of Medical Entomology* 41 (3): 511-523.

Grassberger, M. & C. Reiter, 2002, Effect of temperature on development of *Liopygia* (= *Sarcophaga*) *argyrostoma* (Robineau-Desvoidy) (Diptera: Sarcophagidae) and its forensic implications. *Journal of Forensic Sciences* 47 (6): 1332-1336.

Greathead, D. J., 1963, A review of the insect enemies of Acridoidea (Orthoptera). *Transactions of the Royal Zoological Society of London* 114 (14): 437-517.

Greathead, D. J., 1992, *Natural enemies of tropical locusts and grasshoppers: their impact and potential as biological control agents*. In: C. J. Lomer, & C. Prior (eds), *Biological control of locusts and grasshoppers*. Oxon, CAB International [1991]: 105-121.

Greathead, D. J., Kooyman, C., Launois-Luong, M. H. & G. B. Popov, 1994, Les ennemis naturels des criquets du Sahel. *Collection Acridologie Opérationnelle* 8: 1-86.

Greenberg, B., 1971, *Flies and Diseases*. Vol. I. *Ecology, classification and biotic associations*. Princeton University Press; Princeton, New Jersey. 856 pp.

Greenberg, B., 1973, *Flies and Diseases*. Vol. II. *Biology and disease transmission*. Princeton University Press; Princeton, New Jersey. 447 pp.

Gregor, F. & D. Povolný, 1961, Resultate stationärer Untersuchungen von synanthropen Fliegen in der Umgebung einer Ortschaft in der Ostslowakei. *Zoologické listy* 10 (1): 17-44.

Grobov, O. F., Konovalova, T. V., Zimina, L. V., Stolbov, N. M., Palevich, S. M., Pashayan, S. A., Smirnov, A. M. & S. N., Luhansky, 1988, *The methodical recommends to the knowledge of the myiasis of aculeate hymenopterans*. Editorial board of VASKHNIL, Moscow. 36 pp.

Groth, U. & H. Reissmüller, 1973, Beziehungen synanthroper Fliegen zu Kleintierleichen. I. Teil: Methodik, Vor- und Hauptversuche. *Angewandte Parasitologie* 14 (2): 83-100

Grunin, K. Y., 1954, Parasites of the principal species of butterflies injurious to trees of the middle course of the river Ural. *Transcations of Zoological Institute* 16: 427-456 [in Russian with English subtitle].

Gudjabisz, M. G., 1970, Study of sarcophagine (Diptera, Sarcophagidae) of Georgia. *Vestnik Zoologii* (4): 47-53 [in Russian with English summary]

Guilhon, J., 1945, Un nouveau cas d'apimyase. *Bulletin de la Académie vétérinaire de France* 18: 1-3.

Guilhon, J., 1950, Myase des abellies. *Revue médicale et vétérinaire* 126: 641-660.

Guimarães, J. H., Papavero, N. & A. P. Prado, 1983, As miásas na região Neotropical: (identificação, biologia, bibliografia). *Revista Brasiliera de Zoologia* 1 (4): 239-416.

Gunárová, V. & M. Slamečková, 1966, Výsledky výskumu ovadov (Tabanidae, Diptera) a mäsiarov (Sarcophagidae, Diptera) z jugovýchodného Slovenska. *Acta zootechnica Universitatis agriculturae nitraensis* 15: 130-144.

Guo, Y., Cai, J., Chang, Y., Li, X., Liu, Q., Wang, X., Zhong, M., Wen, J. & J. Wang, 2011, Identification of forensically important sarcophagid flies (Diptera: Sarcophagidae) in China, based on COI and 16S rDNA gene sequences. *Journal of Forensic Sciences* 56 (6): 1534-1540.

Guo, Y. D., Cai, J. F., Li, X., Xiong, F., Su, R. N., Chen, F. L., Liu, Q. L., Wang, X. H., Chang, Y. F., Zhong, M., Wang, X. & J. F. Wen, 2010a, Identification of the forensically important sarcophagid flies *Boettcherisca peregrina*, *Parasarcophaga albiceps* and *Parasarcophaga dux* (Diptera: Sarcophagidae) based on COII gene in China. *Tropical Biomedicine* 27 (3): 451-460.

Guo, Y., Zha, L., Yan, W., Li, P., Cai, J. & L. X. Wu, 2010b, Identification of forensically important sarcophagid flies (Diptera: Sarcophagidae) based on COI gene in China. *Romanian Journal of Legal Medicine* 18: 217-224.

Gurney, W. B., 1908, Notes on grasshopper (or locust) swarms in New South Wales during 1907-8. *Agricultural Gazette of New South Wales* 19: 411-419 + 1 pl.

Haarlov, N., 1961, Om fluelarver. *Naturens Verden* [1961]: 112-117

Hall, D. G. & G. E. Bohart, 1948, The Sarcophagidae of Guam (Diptera). *Proceedings of the Entomological Society of Washington* 50: 127-135.

Hall, M. J. R. & K. G. V. Smith, 1993, Diptera causing myiasis in man. Chapter 12. In: Lane, R. P. & R. W. Crosskey (eds), *Medical insects and arachnids*: 429-469. Chapman and Hall; Natural History Museum, London.

Hanski, I., 1987, Carrion fly community dynamics: patchiness, seasonality and coexistence. *Ecological Entomology* 12 (3): 257-266.

Hardy, D. E., 1980, Diptera: Cyclorrhapha IV, Series Schizophora, Section Calyptratae. *Insects of Hawaii* 14: i-vii + 1-491.

Hardy, G. H., 1943, The Sarcophaginae of Australia and New Zealand. *Proceedings of the Linnean Society of New South Wales* 68 (1-2): 17-32.

Harpaz, I. & Y. Oseri, 1961, *Crop-damaging snails in Israel and their control*. Marketing Boar, Hebrew University, Faculty of Agriculture, 44 pp. Rehovot & Citrus, Tel Aviv.

Hatsuchika, R., Hyo, Y. & T. Okino, 1988, A case study of otomyiasis caused by *Parasarcophaga similis* (Meade 1876) (Diptera, Sarcophagidae). *Kawasaki Medical Journal* 14 (2): 83-90.

Hatsuchika, R., Ushirogawa, H. & Y. Iwanaga, 2002, A case study of human otomyiasis caused by *Parasarcophaga similis* (Meade, 1876) (Diptera: Sarcophagidae) found in Hiroshima, Japan. *Kawasaki Medical Journal* 28 (1): 33-41.

Hayashida, N., 2013, A report of parasitic Diptera on cicadas (3), with new records of parasitoid sarcophagid flies *Horiisca hozawai* and *Kramerea schuetzei* from Kôfu, Yamanashi Prefecture, Honshu. *Cicada* 20 (4): 71-74.

Hernandez, C. P., 1992, *Posibilidades de control microbiológico de Dociostaurus maroccanus en la serena (badajoz)*. Universidad de Cordoba. Centro de lectura: ingenieros agronomos. Centro de realización: departamento: ciencias y recursos agrícolas y forestales programa de doctorado: investigación y nuevas tecnologías en ciencias agrícolas. Theses doctorales. http://www.cibernetia.com/tesis_es/index.php.

Herting, B. & F. J. Simmonds, 1976, *A catalogue of parasites and predators of terrestrial arthropods*. Sect. A, host or prey/enemy: 7, Lepidoptera, Pt 2 (Microlepidoptera). Commonwealth Agricultural Bureaux, 221 pp.

Hoch, G., Zubrik, M. & J. Novotny, 2001, The natural enemy complex of the gypsy moth, *Lymantria dispar* (Lep., Lymantriidae) in different phases of its population dynamics in eastern Austria and Slovakia - a comparative study. *Journal of Applied Entomology* 125 (5): 217-227.

Hopkins, D. C. & G. Baker, 1993, Biological control of white and conical snails. In: S. A. Corey, D. J. Dall & W. M. Milne, (eds), *Pest Control and Sustainable Agriculture*. Commonwealth Scientific and Industrial Research Organisation: 246-249. Canberra.

Hori, K., 1967, The dipteran visitors to *Stapelia grandiflora* flowers. *Kontyû* 35: 60-61.

Hörning, B., 1959, Fliegen als Überträgerüberträger parasitärer Würmer. *Zeitschrift für angewandte Zoologie* 46 (3): 338-342.

Hovemeyer, K., 1985, *Die Zweiflügler (Diptera) eines Kalkbuchenwaldes: Lebenszyhlen, Raum-Zeit-Muster und Nachrungsbioologie*. Dissertation zur Erlangerung der Doktorgrades der Mathematisch-Naturwissenschaftlichen Fachbereiche der Georg-August-Universität zu Göttingen. iv + 280 S.

Husain, A., Husain, S., Malaviya, G. N. & R. R. Bahadur, 1993, Myiasis in leprosy. *Acta Leprologica* 8 (3): 137-141.

Illingworth, J. F., 1928, Insects collected in the pineapple growing section on the Island of Lanai, August, 1927. *Proceedings of the Hawaiian Entomological Society* 7 (1): 42-46.

Ilyashenko, L. Ya., 1962, Fauna of synanthropic flies of village settlements of Gissar valley. *Transactions of Academy of Sciences Tadzhik SSR. Branch of Agrarian and Biological Sciences* 4: 81-88 [in Russian].

Introna, F., Campobasso, C. P. & A. Di Fazio, 1998, Three cases studies in forensic entomology from southern Italy. *Journal of Forensic Sciences* 43 (1): 210-214.

Ishijima, H., 1967, Revision of the third stage larvae of synanthropic flies of Japan (Diptera: Anthomyiidae, Muscidae, Calliphoridae and Sarcophagidae). *Japanese Journal of Sanitary Zoology* 18 (2-3): 47-100.

Ito, S. & D. Koshimizu, 1955, On a case of intestinal myiasis. *Rinsho Jikken* 25 (3): 133-135.

Ivliev, L. A. & E. M. Sinchylina, 1964, *Dasychira albodentata* Bremer in Amur forests and it's role in populations of Siberian moth (*Dendrolimus sibiricus* Tschtv.): 62-67. In: A. I. Kurentzov (ed.), *Ecology of insects of Primorye and Priamurye*. 128 pp., Nauka, Moscow [in Russian].

Jamagishi, K., Okadome, T. & M. Ino, 2003, Biological mites on the flies emerging from the feces of great cormorant in Japan (Diptera). *Medical Entomology and Zoology* 54 (3): 253-256.

James, M. T., 1947, The flies that cause myiasis in man. *Miscellaneous Publications of the United States Department of Agriculture* 631: 1-175.

Jannone, G., 1934, Osservazioni ecologiche e biologiche sul *Dociostaurus maroccanus* Thunb., *Calliptamus italicus* L. e loro parassiti in Provincia di Napoli (primo contributo). *Bulletino della Laboratoria zoologica Portici* 28: 75-151.

Jędrzejewska-Szmk, K. & M. Zych, 2013, Flower-visitor and pollen transport networks in a large city: structure and properties. *Arthropod-Plant Interactions* 7: 503-516.

Joshi, B. G., Sitaramaiah, S., Satyanarayana, S. V. V. & G. Ramaprasad, 1979, Note on natural enemies of *Spodoptera litura* (F.) and *Myzus persicae* (Sulz.) on flue-cured tobacco in Andhra Pradesh. *Science and Culture* 45 (6): 251-252.

Judd, W. W., 1970, Studies on the Byron Bog in southwestern Ontario. XLIV. Flies (Sarcophagidae, Muscidae and Tachinidae) trapped in the bog. *Entomological News* 81: 189-190.

Kaldor, C. J. & G. L. Baker, 1996, Estimation of mortality of *Chortoicetes terminifera* (Walker) (Orthoptera: Acrididae) from parasitism by *Blaesoxiphia rufipes* (Macquart) (Diptera: Sarcophagidae). *General and Applied Entomology* 27: 49-56.

Kaneko, K., Amano, K., Kubota, K. & A. Hosokawa, 1968, A new human otomystiasis caused by the larvae of *Parasarcophaga harpax*. *Japanese Journal of Sanitary Zoology* 19 (4): 248-252.

Kano, R., Field, G. & S. Shinonaga, 1967, *Sarcophagidae (Insecta: Diptera)*. Biogeographical Society of Japan, Tokyo, xii + 168 pp. + 41 pls. [Fauna Japonica 7].

Kano, R. & A. Kokubo, 1962, On sarcophagid flies recovered from the pine-moth, *Dendrolimus spectabilis* Butler (supplementary note). *Japanese Journal of Sanitary Zoology* 13 (1): 219.

Kano, R., Thinh, T. H. & H. Kurahashi, 1999, The flesh-flies (Diptera, Sarcophagidae) from the northern part of Vietnam. *Bulletin of National Scientific Museum A* 25 (2): 129-141.

Kara, K. & T. Pape, 2002, Check list of Turkish Sarcophagidae (Insecta, Diptera) with new records. *Deutsche zoologische Zeitschrift* 49 (2): 291-295.

Kazanskij, K., 1927, Bombyx de cèdre (*Dendrolimus sibiricus* Tshtv.) dans les forets de la Republique Buriate-Mongole. *La defence des Plantes* 4 (6): 861-915.

Keilin, D., 1919, On the life history and larval anatomy of *Melinda cognata* Meigen, parasitic in the snail *Helicella (Heliomanes) virgata* Da Costa, with an account of the other Diptera living upon molluscs. *Parasitology* 11: 430-455, pls. XXII-XXV.

Keilin, D., 1921, Supplementary account of the dipterous larvae feeding upon molluscs. *Parasitology* 13: 180-183.

Kejval, Z., 1998, Fleshflies of the subfamily Sarcophaginae of the Domazlice Region. *Erica* 7: 61-67.

Kejval, Z., 2011, New records of fleshflies (Diptera: Sarcophagidae) from western Bohemia. *Západočeské entomologické listy* 2: 53-64.

Khan, J. M. A., 1974, Morphological studies of second instar of *Sarcophaga haemorrhoalis* (Diptera: Sarcophagidae) a causative agent of wound myiasis in dog in Karachi, Pakistan. *Pakistan Journal of Sciences and Industrial Research* 17 (6): 217- 218.

Khan, J. M. A., 1987, Gastrointestinal myiasis producing by the maggots of synanthropic flies in human. *Proceedings of the Parasitology* 3: 24-27.

Khanislamov, M. G., Girfanova, L. N., Yafaeva, Z. S. & R. K. Stepanova, 1958, The mass reproduction of gypsy moth (*Lymantria dispar* L.) in Bashkiria. *Investigations of the Focus of Forest Pests in Bashkiria* 1: 5-45. Ufa [in Russian].

Khitzova, L. N., 1967, On the fauna of grey flesh flies (Diptera, Sarcophagidae) of Voroniezh region. *Transactions of Voroniezh State Reserve* 15: 83-85 [in Russian].

Khitzova, L. N., 1968, Review of flies (Diptera, Tachinidae, Sarcophagidae) parasiting in some wood pests in Voroniezh Region. *Transactions for Postgraduate Students of Voroniezh State University (Natural Sciences)* 4: 264-272 [in Russian].

Khitzova, L. N., 1976, *On the fauna of sarcophagids (Diptera, Sarcophagidae) of some regions of USSR*. Voroniezh, 26 pp. Deposited in VINITI 12.10.1976 N 3583-76 Dep. [in Russian].

Khoobdel, M., Akbarzadeh, K., Jafari, H., Mehrabi Tavana, A., Izadi, M., Mosavi Jazayeri, A., Bahmani, M. M., Salari, M., Akhond, M., Rahimi, M., Esfahani, A., Nobakht, M. & J. Rafienejad, 2013, Diversity and abundance of medically-important flies in the Iranian Triple Islands; the Greater Tunb, Lesser Tunb and Abu-Musa. *Iranian Journal of Military Medicine* 14 (4): 327- 336.

Khrokalo, L. A. & Yu. G. Verves, 2009, Dragonflies (Odonata) and certain two-winged insects (Diptera: Calliphoridae; Sarcophagidae) of the Shatsk Lake District. *Scientific Bulletin of Volyn National University in Memory of Lesya Ukrainska. N 2. Biological Sciences*: 114-118 [in Ukrainian with Russian and English summaries].

Kim, Y.-H., Shin, S. E., Ham, C. S., Kim, S. Y., Ko, K. S., Jo, T.-H., Son, G. H., Park, S. H. & J.-J. Hwang, 2014, Molecular identification of necrophagous Muscidae and Sarcophagidae fly species collected in Korea by mitochondrial cytochrome c oxidase subunit i nucleotide sequences. *The Scientific World Journal* (ID 275085): 1-9.

Kirchberg, E. D., 1951, Untersuchungen über die Fliegenfauna menschliches Fäkalien. *Zeitschrift für hygienische Zoologie* 39: 129-139.

Kirchberg, E. D., 1954, Zur Larvennahrung einiger heimischer *Sarcophaga*-Arten, insbesondere zur Frage, ob *S. carnaria* L. als obligatorischer Regenwürmparasit anzusehen sei (Diptera, Tachinidae). *Zeitschrift für Morphologie und Ökologie der Tiere* 43: 99-112.

Kirchberg, E. D., 1961, Zucht von *Sarcophaga carnaria* L. (Diptera, Tachinidae) aus einer Freilandpopulation von Regenwürmern des genus *Allolobophora* Eisen (Oligochaeta, Lumbricidae) (Zur Kenntnis der Gattung *Sarcophaga* Mg. III). *Anzeiger für Schädlingkunde, Pflanzenschulz und Umweltschulz* (1): 6-7.

Kleine, D., 1910, *Sarcophaga albiceps* Meig., Primärparasit bei *Saperda populnea* L. *Entomologische Blätter* 6: 217-221.

Kolomyietz, N. G. 1952, *The biology and practical importance of Siberian moth*. Abstract of candidate dissertation, 9 pp., Krasnoyarsk [in Russian].

Kolomyietz, N. G., 1958, The parasites of damaged wood insects of Siberia. *Entomologicheskoe Obozrenie* 38 (3): 315-318 [in Russian with English summary].

Kolomyietz, N. G., 1962, *Parasites and predators of Siberian moth*. Academy Press, Novosibirsk. 174 pp. [in Russian].

Kolomyietz, N. G., 1966, A review of species of family Sarcophagidae (Diptera) of Siberia. *Transactions of Siberian Branch Academy of Sciences USSR. Serie of Biological and Medical Sciences* 12 (3): 73-81 [in Russian with English summary].

Kolomyietz, N. G., 1987, Insects – parasites and predators of gypsy moth (*Lymantria dispar* L., Lepidoptera) in Asian part of the USSR. *Transactions of Siberian Branch Academy of Sciences USSR. Serie of Biological Sciences* 6 (1): 83-89 [in Russian with English summary].

Kolomyietz, N. G., 1989, The insects – parasites and predators of pine moth (*Dendrolimus pini* L., Lepidoptera). *Transactions of Siberian Branch Academy of Sciences USSR. Serie of Biological Sciences* 8 (1): 70-77 [in Russian with English summary].

Kolybin, V. A. & L. M. Zelinskaya, 1971, Ecological and physiological characteristics of *Porthetria dispar* population in the lower Dnieper area. *Vestnik Zooligii* 5 (1): 26-31 [in Russian with English summary].

Komárek, J., 1938, Kritisches Wort über die Bedeutung der Insektenparasiten der Nonne. *Zeitschrift für angewandte Entomologie* 24 (1): 95-117.

Koçak, A. Ö., 2014, List of the 23773 pterygot species in Turkey based upon the info-system of the CESA. *Priamus* (Suppl.) 32: 1-876.

Koçak, A.Ö. & M. Kemal, 2012, List of the hitherto recorded pterygot taxa of Turkey (Insecta) (temporary report of the Entomofauna Project of Turkey - 10). *CESA Memoirs* 6: 1-1649.

Kramer, H., 1908, *Sarcophaga*-Arten der Oberlausitz. *Entomologische Wochenblatt* 25: 152-153.

Kramer, H., 1909 Nonnenparasiten aus der Gattung *Sarcophaga*. *Entomologische Rundschau* 26: 83-88.

Kramer, H., 1911, Die Tachiniden der Oberlausitz. *Abhandlungen der naturforschenden Gesellschaft zu Görlitz* 27: 117-166.

Kramer, H., 1917, Die Musciden der Oberlausitz. *Abhandlungen der Naturforschenden Gesellschaft zu Görlitz* 28: 257-352.

Krüger, R. F., Kirst, F. D. & A. S. B. de Souza, 2010, Rate of development of forensically-important Diptera in southern Brazil. *Revista Brasileira de Entomologia* 54 (4): 624-629.

Kühlhorn, F., 1986, Dipterenbefall bei Kadavern von *Arion rufus* (Gastropoda) und dessen mögliche hygienische Bedeutung. *Angewandte Parasitologie* 27 (2): 123-130.

Künckel, H. J., 1905, *Invasions des acridiens vulgo-sauterelles en Algérie*. T. 1, pt. 2. 530 pp. Imprimerie administrative et commerciale Girale, A. Franceschi, Alger.

Kurahashi, H. & T. Chaiwong, 2013, Keys to the flesh flies of Thailand, with description of a new species of *Robineauella* Enderlein (Diptera: Sarcophagidae). *Medical Entomology and Zoology* 64 (2): 83-101.

La Baume, W., 1918, Biologie der marokkanischen Wanderhenschrecke (*Stauronotus maroccanus* Thunb.). Beobachtungen aus Kleinasien in den Jahren 1916 und 1917. *Monographien zur angewandten Entomologie* 3: 157-274.

Leccese, A., 2004, Insects as forensic indicators: methodological aspects. *Aggawal's Internet Journal of Forensic Medicine and Toxicology* 5 (1): 26-32.

Leclercq, M., 1976, Entomologie et médecine légale: *Sarcophaga argyrostoma* Rob.-Desv. (Dipt., Sarcophagidae) and *Phaenicia sericata* Meig. (Dipt., Calliphoridae). *Bulletin et annales de la Société royale belge d'entomologie* 112 (4-6): 119-126.

Lee, D. S., 1963, Studies on a Korean unrecorded pamphilid-sawfly (Hymenoptera, Symphyta) feeding on Korean pine. III. The natural enemies. *Korean Journal of Zoology* 6 (1): 21-24.

Lehrer, A. Z., 1966, Quelques données bio-morphologiques sur l'espèce *Discachaeta cucullans* Pandellé 1896 (Fam. Sarcophagidae, Diptera). *Bulletin et annales de la royale Société entomologique de Belgique* 102 (11): 197-200.

Lehrer, A. Z., 2006, Liste des *Sarcophaginae* et *Paramacronychiinae* du Proche Orient, identifiés dans les collections de TAU (Diptera, Sarcophagidae). *Fragmenta dipterologica* 3: 14-22.

Lehrer, A. Z. & K. Dobrivojević, 1969, Morphological and biological study of entomophagous Diptera of Yugoslavia. *Journal for Scientific Agricultural Research* 22 (77): 99-117.

Lehrer, A. Z. & P. Luciano, 1979, Sarcophagides (Diptera) parasites de *Porthetria dispar* (L.) en Sardaigne et leur cartographie dans le réseau U.T.M. *Studi sassaresi*, Sez. III, *Annali della Facoltà di Agraria dell'Università di Sassari* 27 (3): 161-173.

Lehrer, A. Z. & J. D. Omgba, 2013, Une nouvelle espèce du genre *Blaesoxipha* Loew de la faune du Cameroun (Diptera, Sarcophagidae). *Fragmenta dipterologica* 38: 1-3.

Léonide, J., 1965, Contribution à l'étude biologique des diptères sarcophagidés, parasites d'acridiens. II. Cycle biologique de *Blaesoxipha ungulata* (Pandellé). *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences* 261: 5199-5202.

Léonide, J., 1967, Contribution à l'étude biologique des diptères sarcophagidés, parasites d'acridiens. III. Cycle biologique de *Blaesoxipha rossica* Vill., injection de larves dans le corps de l'hôte par les femelles de sarcophagides. *Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences* 265: 232-234.

Léonide, J. & J.-C. Léonide, 1971, Contribution à l'étude des diptères sarcophagidés acridiophages. V. Notes faunistiques et biologiques. *Bulletin de la Société entomologique de France* 76 (5-6): 111-122.

Léonide, J. & J.-C. Léonide, 1972, Contribution à l'étude des diptères sarcophagidés acridiophages. VI. Taxonomie, morphologie et biologie de *Blaesoxipha cochlearis* Pandellé. *Bulletin de la Société entomologique de France* 77 (1-2): 60-77.

Léonide, J. & J.-C. Léonide, 1977, Contribution à l'étude des diptères sarcophagidés acridiophages. XI. Bio-taxonomie de *Blaesoxipha litoralis* (Diptera: Sarcophagidae). *Annales de la Société entomologique de France* (N. S.) 13 (2): 297-313.

Léonide, J. & J.-C. Léonide, 1979, Contribution à l'étude des diptères sarcophagidés acridiophages. XII. Bio-taxonomie de *Blaesoxipha gladiatrix* (Pandellé) Villeneuve 1911. *Bulletin de la Société entomologique de France* 84 (9-10): 247-265.

Léonide, J. & J.-C. Léonide, 1982, Contribution à l'étude des diptères sarcophagidés acridiophages. XIII. Bio-taxonomie de *Blaesoxipha grylloctona* Loew 1861. Nouvelles réflexions sur la systématique de ce genre et les méthodes d'investigation. *Annales de la Société entomologique de France* (N. S.) 18 (4): 483-506.

Léonide, J. & J.-C. Léonide, 1983, Contribution à l'étude des diptères sarcophagidés acridiophages. XVIII. Inventaire et revision des *Blaesoxipha* du Museum national d'Histoire naturelle à Paris. Revue française d'entomologie (N. S.) 5 (4): 129-154.

Léonide, J. & J.-C. Léonide, 1986, *Les diptères sarcophagidés endoparasites des orthoptères français. Essai biotaxonomique.* 301 pp. Univ. de Provence Publ., Marseille.

Léonide, J.-C., 1983, Richesse en intérêt du foyer acridien gregarigène et du foyer parasitogène acridiophage de la Crau. *Biologie et écologie méditerranée* 10 (1-2): 145-153.

Lobanov, A. M., 1966, On the knowledge of the synanthropic flies in closed stations. *Medical Parasitology and Parasitic Diseases* 35 (1): 55-60 [in Russian].

Löw, H. 1861, *Blaesoxipha grylloctona*, nov. gen. et spec. *Wiener entomologische Monatschreiben* 5: 384-387.

Logoida, S. S., 1974, The results of the studying of entomophages of leaf-eaten pests of oak in Transcarpathian and the ways of their utilization in integrational control. *Increasing of Forestry Production Based on Scientific Progress*: 191-193, Ivano-Frankivsk [in Russian].

Logoida, S. S., 1978, Growth spurts in the gypsy moth population in Transcarpathian oak forests and the dynamics of this population in the graded period of 1970-1976. *Scientific Reports of High School. Biological Sciences* (2): 59-65 [in Russian with English summary].

Lomer, C. J. Parashar B. D. & K. M. Rao, 1989, Biological studies of the flesh fly *Sarcophaga misera* and its effects as a predator of the snail *Indoplanorbis exutus*. *Entomophaga* 33 (4): 431-434.

Lopes, H. S. de, 1955, Australian species of the genus "Blaesoxipha" Loew, 1861 (Diptera, Sarcophagidae). *Revista brasiliensis de biologia* 15 (3): 315-320.

Lopes, H. S. de, 1958, Diptera: Sarcophagidae. *Insects of Micronesia* 13 (2): 15-49.

Lopes, H. S. de, 1959, A revision of Australian Sarcophagidae (Diptera). *Studia entomologica* 2 (1-4): 33-67.

Lukin, L. G., 1989a, Human cutaneous myiasis in Brisbane: a prospective study. *Medical Journal of Australia* 150 (5): 237-240.

Lukin, L. G., 1989b, Human cutaneous myiasis in Brisbane. *Entomological Society of Queensland, News Bulletin* 17 (2): 15-21.

Lundbeck, W., 1927, *Diptera danica, genera and species of flies hitherto found in Denmark*. Part 7. *Platypezidae, Tachinidae*. G. E. C. Gad, Copenhagen. 560 + 11 pp.

Magliulo, G., Gagliardi, M. & R. D'Amico, 2000, Human aural myiasis. *Otolaryngology -Head and Neck Surgery* 122 (5): 777.

Magnarelli, L. A. & T. G. Andreadis, 1981, Human cases of furuncular, traumatic, and nasal myiasis in Connecticut. *American Journal of Tropical Medicine and Hygiene* 30 (4): 894-896.

Maroli, M. & E. Pozio, 2000, Influence of temperature on the survival and infectivity of *Trichinella spiralis* larvae in *Sarcophaga argyrostoma* (Diptera, Sarcophagidae) maggots. *Journal of Parasitology* 86 (3): 633-634.

Martínez-Sánchez, A., Magaña, C., Peréz-Bañón, C., Rojo, S. & D. González-Mora, 2006a, Taxonomy and larval study of flesh flies (Diptera: Sarcophagidae) associated with human corpses in Spain [abstract] *Proceedings of the Fourth Meeting of European Association for Forensic Entomology*: 63. Bari, Italy.

Martínez-Sánchez, A., Rojo, S. & M. A. Marcos-Garsíá, 2000b, Sarcofágidos necrófagos y coprófagos asociados a un agroecosistema de dehesa (Diptera, Sarcophagidae). *Boletín de la Asociación Española de entomología* 24 (3-4): 171-185.

Martínez-Sánchez, A., Rojo, S. & M. A. Marcos-Garsíá, 2000, Annual and spatial activity of dung flies and carrion in a Mediterranean holm-oak pasture ecosystem. *Medical and Veterinary Entomology* 14 (1): 56-63.

Mazza, S. & R. Basso, 1939, Miasis de úlcera crónica de pierna por *Sarcophaga barbata* y *Cochliomyia hominivorax* (Investigaciones sobre dípteros argentinos. I. Miasis). *Publicaciones Misión de Estudios de Patología Regional Argentina* 41: 47-54.

McAtee, W. L., 1927, Notes on insect inhabiting of bird houses. *Proceedings of the Entomological Society of Washington* 29 (4): 87-90.

McGovan, A., Broderick, A. C., Deeming, J., Goldley, B. J. & E. G. Hancock, 2001, Dipteran infestation of loggerhead (*Caretta caretta*) and green (*Chelonia mydas*) sea turtle nests in northern Cyprus. *Journal of Natural History* 35: 573-581.

Meiklejohn, K. A., 2012, *Taxonomy and systematics of the Australian Sarcophaga s. l. (Diptera: Sarcophagidae)*. Doctor of Philosophy thesis, 163 pp. School of Biological Sciences, University of Wollongong, Australia.

Melis, A., 1934, Il grillastro crociato (*Dociostaurus maroccanus* Thunb.) e le sue infestazioni in Sardegna. *Atti Accademia Geografia Firrense* 30: 399-504, 6 pls.

Menzel, F. & J. Ziegler, 2002, Neue Funde von Zweifluglern (Diptera) aus dem Nationalpark Hohe Tauern in Österreich nebst Angaben zum Blütenbesuch und der Beschreibung von zwei neuen Traürmücken-Arten (Sciaridae). *Studia dipterologica* 8: 355-409.

Mihályi, F., 1966, Flies visiting fruit and meat in an open-air market in Budapest. *Acta zoologica Academiae scientiarum Hungariae* 12 (3-4): 331-337.

Mihályi, F., 1979, Fémeslegyek - Húslegyek, Calliphoridae - Sarcophagidae. *Fauna hungarica* 135, 15 (16): 1-152.

Mik, J., 1890, Dipterologische Miscellen. XVI. *Wiener entomologische Zeitung* 9 (5): 153-158.

Mitsui, H., 1996, Ecological studies of the cyclorrhaphous flies under urban and suburban environments in Tokyo and a neighboring city. *Medical Entomology and Zoology* 47 (2): 121-129.

Mitsui, H., 2002, Habitat preference of carrion-breeding calliphorid and sarcophagid flies in central Japan. *Medical Entomology and Zoology* 53 (2): 275-278.

Miura, K. & T. Ohgushi, 2010, A new host record for *Blaesoxipha rufipes* (Diptera: Sarcophagidae) on *Atractomorpha lata* (Orthoptera: Pyrgomorphidae) from Japan. *Entomological News* 121 (2): 213-214.

Mohamed Aly, S., & J. Wen, 2013, Molecular identification of forensically relevant Diptera inferred from short mitochondrial genetic marker. *Libyan Journal of Medicine* 8: 1-2.

Mohamed Aly, S., Wen, J., Wang, X. & J. Cai, 2012, Cytochrome oxidase II gene 'short fragments' applicability in identification of forensically important insects. *Romanian Journal of Legal Medicine* 20 (3): 231-236.

Mohamed Aly, S., Wen, J. & X. Wang, 2013a, Identification of forensically important Sarcophagidae (Diptera) based on partial mitochondrial cytochrome oxidase I and II genes. *American Journal of Forensic Medicine and Pathology* 34 (2): 159-163.

Mohamed Aly, S., Wen, J., Wang, X., Cai, J., Liu, Q. & M. Zhong, 2013b, Identification of forensically important arthropods on exposed remains during summer season in northeastern Egypt. *Journal of Central South University, Medical Sciences* 38 (1): 1-6.

Moran, S., 1987, Insect enemies of the landsnail *Theba pisana* in Israel. *Israel Journal of Entomology* 21: 129-130.

Morris, B., 1987, First reported case of human aural myiasis caused by the flesh fly *Parasarcophaga crassipalpis* (Diptera: Sarcophagidae). *Journal of Parasitology* 73 (5): 1067-1069.

Mulieri, P. R., Mariluis, J. C. & L. D., Patitucci, 2010, Review of the Sarcophaginae (Diptera: Sarcophagidae) of Buenos Aires Province (Argentina), with a key and description of a new species. *Zootaxa* 2575: 1-37.

Mulieri, P. R., Patitucci, L. D., Schnack, J. A. & J. C. Mariluis, 2011, Diversity and seasonal dynamics of an assemblage of sarcophagid Diptera in a gradient of urbanization. *Journal of Insect Science* 11 (91): 1-15.

Mulieri, P. R., Schnack, J. A., Mariluis, J. C. & J. P. Torretta, 2008, Flesh flies species (Diptera: Sarcophagidae) from a grassland and a woodland in a Nature Reserve of Buenos Aires, Argentina. *Revista de Biología Tropical* 56 (3): 1287-1294.

Nadzhafarov, I. G., 1967, Role of different species of synanthropic flies in dissemination of oncosphaeres of *Taeniarhynchus saginatus*. *Medical Parasitology and Parasitic Diseases* 34 (2): 144-149 [in Russian with English summary].

Nagakura, K., Isozaki, M., Shigeta, M., Shimamura, T., Tachibana, H., Kaneda, Y. & R. Kano, 1984, A case of intestinal myiasis. *Tokai Journal of Experimental and Clinical Medicine* 9 (5-6): 345-348.

Nadzhafarov, I. G., 1967, Role of different species of synanthropic flies in dissemination of oncosphaeres of *Taeniarhynchus saginatus*. *Medical Parasitology and Parasitic Diseases* 34 (2): 144-149

Nakonechny, V. I., 1973a, A role of dipterous entomophages in control of different phases of gradation of dendrophilic butterflies. *Entomological Investigations on Far East. 2. Diptera of Far East*: 117-125. Novosibirsk [in Russian with English subtitle].

Nakonechny, V. I. 1973b, A role of dipterous entomophages and viruses epizootic in lowering of quantity of monk moth, *Ocneria monacha* L. (Lepidoptera) in light-coniferous forests of Amur-Zeya mid-river. *Entomological Investigations on Far East. 2. Diptera of Far East*: 140-152, Novosibirsk [in Russian with English subtitle].

Nakonechny, V. I., Iqliyev, A. A. & P. G. Yatzsenkov, 1973, On dipterous entomophages of *Dasychira albodentata* Bremer (Lepidoptera) in light-coniferous forests of Amur-Zeya mid-river. *Entomological Investigations on Far East. 2. Diptera of Far East*: 126-129, Novosibirsk [in Russian with English subtitle].

Nandi, B. C., 2002, Diptera Sarcophagidae. *Fauna of India and the Adjacent Countries* 10: I-xxiv, 1-608.

Nash, R., 2005, Two unpublished cases of myiasis. *Diptera info*: 1.

Nazni, W. A., Nooraidah, H., Jeffery, J., Azahari, A. H., Mohd Noor, I., Sadiyah, I. & H. L. Lee, 2007 Distribution and abundance of diurnal and nocturnal dipterous flies in the Federal Territory, Putrajaya. *Tropical Biomedicine* 24 (2): 61-66.

Ndueze, O. U. Okiwelu, S. N., Umeozor, O. C. & M. A. E., Noutcha, 2013, Arthropod succession on wildlife carcasses in lowland rainforest, Rivers State, Nigeria. *European Journal of Experimental Biology* 3 (5): 106-110.

Nielsen, S. A., Nielsen, B. O. & H. Wallhovd, 1978, Blowfly myiasis (Diptera: Calliphoridae, Sarcophagidae) in the hedgehog (*Erinaceus europaeus* L.). *Entomologiske Meddelerser* 46 (2): 92-94.

Nijazbekov, Z. B., 2007, *Specific structure, bioecological peculiarities and the development of protection measures against the major harmful locusts in the south of Kazakhstan*. Abstract of candidate dissertation, 24 pp. Alma Ata, Kazakhstan.

Nikolsky, V. V., 1913, Causes of the migrations of larvae and other problems of the biology of the Asiatic Locust. *Report of the Turkestan Agricultural Research Station* (5): 1-30, 162 [in Russian].

Novotný J., Turcáni, M. & M. Zúbrik, 1998, System of gypsy moth population regulation in the Slovak Republic. In: M. L. McManus and A. M. Liebhold (editors). Proceedings: Population dynamics, impacts,

and integrated management of forest defoliating insects. *USDA Forest Service General Technical Report NE-247*: 269-276.

Okadome, T., Yamagishi, K. & M. Ino, 2002, Investigations on the flies emerging from the faeces of the great cormorant in Japan. *5th International Congress of Dipterology. 29th September to 4th October 2002, Brisbane, Australia*. Abstracts Vol.: 178.

Olechowicz, E., 1976, The role of coprophagous dipterans in a mountains pasture ecosystem. *Ekologia Polska* 34 (2): 125-165.

Oliva, A., 1997, Insectos de inter  s forense de Buenos Aires (Argentina). Primera lista ilustrada y datos bion  micos. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia"* 7: 13-59.

Oliver, S. & D. Croft, 2010, Wingless grasshoppers. *Primefact* 631: 1-6.

Olsoufjev, N. G., 1929, The etudes on parasites of Asian locust (*Locusta migratoria* L.) from order of two-winged flies and their superparasites. I. Parasites of larvae and adult insects. *Transactions on Applied Entomology* 4 (1): 61-119 [in Russian with English summary].

Olsoufjev, N. G., 1930, Zur Frage   ber die Periodizit  t der asiatischen Heuschrecke. *Bulletin of Plant Protection. Series of Entomology* 1 (1): 91-147 [in Russian with German summary].

Orlov, Yu. M. & G. I. Yurchenko, 1978, On the Siberian moth and pest against it in cedar-wideleaves forests of the Far East. *Plant Protection from Pests and Diseases*: 127-130, Kaunas.

Otranto, D. & J. R. Stewens, 2002, Molecular approaches to the study of myiasis-causing larvae. *International Journal for Parasitology* 32 (11): 1345-1360.

Pakalni  kis, S. & Pod  nas, S., 1992, 258 new to Lithuania Diptera species found in 1964-1992: 56-82. In: V. Jonaitis (ed.), *New and Rare for Lithuania Insect Species. Records and Distributions of 1992*, 115 pp. Institute of Ecology, Vilnius.

Paoli, G., 1910, Sulla *Sarcophaga lineata* Fall  n parassita dello *Stauronotus maroccanus* (Thunb.) in Sardegna. *Bollettino del Laboratorio di Zoologia Generale e Agraria della R. Scuola superiore d'Agricoltura in Portici* 4: 347-352

Paoli, G., 1919, La lotta contro le cavallette in Capitanata nel 1917-1918. *Bollettino del Ministero dell'Agricoltura* 18: 1-11.

Paoli, G., 1932, Osservazioni sulla biologia del "Dociostaurus maroccanus" Thnb. in Italia nelle fasi gregaria e solitaria e sull'azione di alcurri insetti parassiti. *Nuovi Annali dell'Agricoltura* 12: 627-639

Paoli, G., 1939, Ditteri endofigi delle cavallette di Foggia. *Bollettino del Societ   Entomologica italiana* 71 (6-7): 116-118.

Pape, T., 1987, The Sarcophagidae (Diptera) of Fennoscandia and Denmark. *Fauna entomologica scandinavica* 19: 1-203 + 2 pl.

Pape, T., 1994, The world *Blaesoxipha* Loew, 1861 (Diptera: Sarcophagidae). *Entomologica scandinavica Suppl.* 45: 1-247.

Pape, T., 1996, Catalogue of the Sarcophagidae of the world (Insecta: Diptera). *Memoirs of Entomology, International* 8: 1-558. Gainsville, Florida.

Pape, T. & O. J. Arribas, 1999, *Sarcophaga protuberans* Pandell   – an Old World predator of lizard eggs (Diptera: Sarcophagidae; Reptilia: Lacertidae). *Studia dipterologica* 6 (1): 73-87.

Pape, T., Gonzalez-Mora, D., Peris, S. V. & M. Baez, 2002, Sarcophagidae, p. 218-221. In: H.-A. M. Carles-Tolra (coordinator). Catalogo de los Diptera de Espana, Portugal y Andorra (Insecta). *Monografias SEA*, Vol. 8. Zaragoza.

Pape, T. & B. Merz, 1998, Sarcophagidae. *Fauna Helvetica* 1: 338-341.

Papp, L., 1971, Ecological and production biological data on the significance of flies breeding in cattle droppings. *Acta zoologica hungarica* 17: 91-105.

Papp, L., 1985, Flies (Diptera) developing in sheep droppings in Hungary. *Acta zoologica Academiae scientiarum Hungariae* 31: 367-379.

Papp, L., 1995, Dipterous assemblages of sheep-run droppings in Hungary (Diptera) I.: Qualitative results. *Folia entomologica Hungarica* (N. S.) 56: 153-162.

Paraiso, A., Lomer, C. J., Godonou, I. & D. Kpindu, 1992, *Preliminary studies on the ecology of Zonocerus variegatus in the Republic of Benin*. In: C. J. & Lomer, C. Prior, (eds). Biological control of locusts and grasshoppers: proceedings of a workshop held at the International Institute of Tropical Agriculture, Cotonou, Republic of Benin, 29 April - 1 May 1991. CAB International. Wallingford: 133-141.

Parashar, B. D. & K. M. Rao, 1989, Biological studies of the flesh fly *Sarcophaga misera* and its effects as a predator of the snail *Indoplanorbis exutus*. *Entomophaga* 33 (4): 431-434.

Parashar, B. D., Rao, Y. V. S. & K. M. Rao, 1997, Effect of environmental temperature on development, fecundity, survival and predation of the snail-predator *Sarcophaga misera* (Dipt., Sarcophagidae). *Entomophaga* 42 (3): 343-347.

Park, S.-H., 1977, Studies on flies in Korea. 11. Taxonomical studies on sarcophagid flies (Diptera). *Bulletin of Tokyo Medical and Dental University* 24 (4): 249-284.

Parker, R. R., 1919, Concerning the subspecies of *Sarcophaga dux* Thomson. *Bulletin of Brooklyn Entomological Society* 14: 41-46.

Pekbey, G. & R. Hayat, 2010, Faunistic studies on the family Sarcophagidae (Diptera) species from Erzurum province (Turkey). *Turkish Journal of Entomology* 34 (2): 263-275.

Pekbey, G. & R. Hayat, 2013a, New records and updated distributions of *Blaesoxipha* Loew, 1861 (Diptera: Sarcophagidae) from Turkey. *Journal of the Entomological Research Society* 15 (3): 25-36.

Pekbey, G. & R. Hayat, 2013b, New records and distributional data on *Sarcophaga* (*Heteronychia*) (Diptera: Sarcophagidae) from Turkey. *Turkish Journal of Zoology* 37: 458-461.

Pérez-Moreno, S., Marcos-García, M. A. & S. Rojo, 2006, Comparative morphology of early stages of two Mediterranean *Sarcophaga* Meigen, 1826 (Diptera; Sarcophagidae) and a review of the feeding habits of Palaearctic species. *Micron* 37 (2): 169-179.

Peris, S. V., Gonzalez-Mora, D. & E. Mingo, 1994, Los Helicophagellina (sensu Verves, 1986) (Diptera, Sarcophagidae) de la Peninsula Iberica. *Boletin de la Real Sociedad española de Historia Natural (Sección Biológica)* 91 (1-4): 143-153.

Peris, S. V., Gonzalez-Mora, D. & E. Mingo, 2001, The *Blaesoxipha* "sensu lato" (Diptera, Sarcophagidae) from the Iberian Peninsula with some records from Canary Islands. *Boletin de la Real Sociedad española de Historia Natural (Sección Biológica)* 96 (3-4): 213-230.

Pickens, L. G., 1981, The life history and predatory efficiency of *Ravinia lherminieri* (Diptera: Sarcophagidae) of the face fly (Diptera: Muscidae). *Canadian Entomologist* 113 (6): 523-526.

Pinetti, P., Lostia, A. & F. Torantino, 1974, The role played by flies in the transmission of the human and animal dermatophytic infections. *Mycopathologia et mycologia applicata* 54 (1): 131-134.

Pollock, J. N., 1972, Functional morphology of male genitalia in *Sarcophaga*: a comparative study. *The Entomologist* 105 (1304): 6-14.

Polsman, E. S., 1929, Über *Locusta migratoria* L. in Gouvernement Tshernigov. *Report of Bureau of Applied Entomology* 4: 275-276.

Portschninsky, I. A., 1887, Diptera europea et asiatica nova aut minus cognita. *Horae Societatis entomologicae Rossicae* 21: 3-20.

Portschninsky, I. A., 1894, Sur les acridiens nuisibles aux cultures et aux prairies des gouvernements de Perm, Tobolsk et Orenbourg. Les parasites des criquets nuisibles en Russie. *Transcations of Entomological Byuro* 1 (1): 1-131 [in Russian with French subtitle].

Pospišil, L. & D. Povolný, 1980, Ein einwandfreier Nachweis der urogenitalien Myiasis in Mitteleuropa, vervursacht von der Fleischfliege *Thrysocnema incisilobata* (Pandellé, 1896) (Diptera, Sarcophagidae). *Zentralblatt für Bakteriologie, Mikrobiologie und Hygiene* A 247: 418-423.

Povolný, D., 1982, *Heteronychia* (*Heteronychia*) *nigricaudata* Povolný et Slamečková nom. n. and notes on its synonymy, taxonomy and distribution. *Annotationes zoologicae et botanicae* 150: 1-9.

Povolný, D., 1985, Zur Genitalmorphologie und Ökologie von drei aus der Tschechoslowakei beschrieben karpatoendemischen *Heteronychia* (*Spatulapica*)-Arten (Diptera, Sarcophagidae). *Acta Universitatis agriculturae et silviculturae mendelianae brunensis* 33 (1): 167-173.

Povolný, D., 1988, Typenbezeichnung und heutiger taxonomischer Stand der von Heinrich Kramer beschriebenen *Sarcophagini* (Diptera, Sarcophagidae). *Abhandlungen und Berichte des Naturkundemuseums Görlitz* 62 (6): 1-16.

Povolný, D., 1992, Zum Schneckenparasitismus und zur Taxonomie einiger *Sarcophagini*-Arten (Diptera, Sarcophagidae). *Acta Universitatis agriculturae et silviculturae mendelianae brunensis* 40 (3-4): 169-185.

Povolný, D., 1996, Taxonomisch-ökologische Bemerkungen zu mittel- und südeuropäischen Fleischfliegen mit Beschreibung von zwei neuen Arten. *Spixiana* 19: 89-114.

Povolný, D., 1997, *Sarcophagidae*: 98-100. In: M. Chvála (ed.), Check list of Diptera (Insecta) of the Czech and Slovak Republics, 130 pp. Karolinum Charles University Press, Prague.

Povolný, D., 1998, *Sarcophaga panormi* sp. n., *Pandelléana siciliae* sp. n. and *Thrysocnema solitaria* sp. n. - three endemic species from Sicily and additional notes on some Mediterranean fleshflies (Diptera, Sarcophagidae). *Acta Universitatis agriculturae et silviculturae mendelianae brunensis* 46 (1): 43-55.

Povolný, D., 1999, Three new Mediterranean taxa of flesh-flies and additional notes on their synecology (Diptera, Sarcophagini). *Acta Universitatis agriculturae et silviculturae mendelianae brunensis* 47 (1): 7-21.

Povolný, D., 2000, Beitrag zur Fleischfliegenfauna (Insecta: Diptera, Sarcophagidae) der Hunsheiner Berge (Niederösterreich). *Verhandlungen der zoologisch-botanischen Gesellschaft in Österreich* 137: 63-76.

Povolný, D., 2003, The second ♂ of *Heteronychia (Pandelléola) volcanoetnica* (Povolný, 2002) and the synonymy of *Heteronychia consanguinea* (Rondani, 1860) from Sicily (Diptera, Sarcophagidae). *Acta Universitatis agriculturae et silviculturae mendelianae brunensis* 51 (1): 19-32.

Povolný, D. & J. Groschaft, 1959, Drei bedeutende Fliegenarten - Schmarotzer der Helicidae aus dem Gebiet der Tschechoslowakei. *Zoologické listy* 8 (22) (2): 131-136.

Povolný, D. & Z. Šustek, 1983, Three dipterous representatives of the Carpathian fauna and preconditions of their discovery (Dipt., Sarcophagidae). *Acta universitatis agriculturae et silviculturae mendelianae brunensis* 52 (1-2): 127-144.

Povolný, D., Vacha, M. & V. Znojil, 1993, Vergleich zwischen Sarcophagini-Taxozönosen (Insecta, Diptera: Sarcophagidae) der tschechoslowakischen Karstgebiete. *Acta scientarum naturalium, Academiae scientarum bohemicae* 27 (4): 1-48.

Povolný, D. & Yu. G. Verves, 1990, A preliminary list of Bulgarian Sarcophaginae (Diptera). *Acta entomologica Museis Nationalis Pragae* 43: 283-329.

Povolný, D. & Yu. G. Verves, 1997, The flesh-flies of Central Europe (Insecta, Diptera, Sarcophagidae). *Spixiana* 24: 1-264.

Povolný, D. & V. Znojil, 1999, Vergleich zwischen Fleischfliegen-Taxozönosen der friechisch-ägäischen und -ionischen Küste, der dalmatinischen Adria-Küste, der spanisch-karalonischen Küste und jeweils anschissender Binnenland-Gebiete (Diptera: Sarcophagidae: Sarcophaginae). *Entomologia generalis* 24 (3): 195-212.

Prado e Castro, C., Arnaldos, M. I., Sousa, J. P. & M. D. García, 2011, Preliminary study on a community of sarcosaprophagous Diptera in central Portugal. *Entomologia generalis* 33 (3): 183-198.

Prado e Castro, C., García, M. D., Arnaldos, M. I. & D. González-Mora, 2010, Sarcophagidae (Diptera) attracted to piglet carcasses including new records for Portuguese fauna. *Graellcia* 66 (2): 285-294.

Predtechensky, S. A., 1928, *Locusta migratoria* in Central Russia. *Proceedings of Bureau on Applied Entomology* 3 (2): 113-199 [in Russian with English summary].

Predtechensky, S. A., 1930, Die Heuschrecke (*Locusta migratoria* L.) in der Rjasano-Tambowschen Niederung. *Bulletin of Plant Protection. Series Entomology* 1 (1): 3-49 [in Russian with German summary].

Principato, M., Pepe, M., Arcelli, R. & G. A. Polidori, 1994, Myiasis in a dog in Umbria by *Sarcophaga haemorrhoidalis* (Fallen) (Diptera: Sarcophagidae): a fly infecting also man. *Parassitologia Roma* 36 (Suppl. 1): 117.

Quo, F., 1954, Notes on *Blaesoxipha lineata* Fall., a dipterous parasite of *Locusta migratoria manilensis* Meyen (Diptera, Sarcophagidae). *Acta entomologica sinica* 4 (3): 277-286 [in Chinese with English summary].

Raffone, J., 2009, Nuovi dati sull distribuzione in Italia di alcuni Sarcophagidae (Insecta, Diptera, Brachycera). *Bollettino del Museo civico di Storia Naturale di Venezia* 60: 103-111.

Ravasan, N. M., Shayeghi, M., Najibi, B. & M. A. Oshaghi, 2012, Infantile nosocomial myiasis in Iran. *Journal of Arthropod-Borne Diseases* 6 (2): 156-163.

Rees, N. E., 1973, Arthropod and nematode parasites, parasitoids and predators of *Acrididae* in America north of Mexico. *Technical Bulletin of the United States Department of Agriculture* (1460): 1-288.

Rees, N. E., 1970, Suitability of selected North American grasshopper species as hosts for the Eurasian parasites *Acridomyia sacharovi* and *Blaesoxipha lineata* (Diptera). *Annals of the Entomological Society of America* 63 (3): 901-903.

Rees, N. E., 1985, Suitability of selected North American grasshopper species in hosts for grasshopper parasites from Pakistan. *Agriculture, Ecosystems and Environment* 12 (2): 157-163.

Remaudière, G., 1947, Sur les principaux parasites du criquet migrateur (*Locusta migratoria* L.) dans ses foyers des Landes de Gascogne. II. Ennemis des larves et des adultes. *Bulletin de la Société entomologique de France* 52: 117-119.

Richards, O. W., 1960, A species of *Sarcophaga* (Dipt., Calliphoridae) new to Ireland. *Entomologist's Monthly Magazine* 96: 17.

Richards, O. W. & N. Waloff, 1954, Studies on the biology and population dynamics of British grasshoppers. *Anti-Locust Bulletin* 17: 1-182 + 4 pls.

Richet, R., 1990, Élevage de larves de diptères sarcophagids. *Imago* 39: 9-13.

Richet, R., 1991, Les sarcophagides présentation et répartition en France (Diptera, Sarcophagidae). *Imago* 43: 3-14.

Richet, R., Blackith, R. M. & T. Pape, 2011, *Sarcophaga* of France (Diptera: Sarcophagidae). *Pensoft Series Faunistica* 97: 1- 227.

Richet, R., Verves, Y. G., Whitmore, D. & T. Pape, 2013, Revision of *Taxigramma pseudaperta* Séguin, 1941 and comparisons with sympatric *T. multipunctata* (Rondani, 1859) (Diptera: Sarcophagidae). *Zootaxa* 3731 (4): 520-532.

Roehrich, R., 1951, Parasites et prédateurs du criquet migrateur (*Locusta migratoria gallica* Rem.) dans les Landes de Gascogne de 1945 à 1950. *Annales de Epiphytes* 2: 479-495.

Rohdendorf, B. B., 1928, Flies of the family Sarcophagidae parasitic on grasshoppers. *Uzbekistan Experimental Station of Plant Protection* Publ. N 14: 1-66 [in Russian with German summary].

Rohdendorf, B. B., 1930, Records of Sarcophagidae with new species. *Bulletin of Entomological Research* 21 (3): 315-318.

Rohdendorf, B. B., 1932, The materials on the knowledge of flies parasitic on locusts. *Bulletin of Plant Protection. Series Entomology* 1 (3): 171-190 [in Russian with German summary].

Rohdendorf, B. B., 1937, Fam. Sarcophagidae. I. Sarcophaginae. *Fauna USSR. Two-winged Insects* 19 (1): i-xv, 1-501 [in Russian with German summary].

Rohdendorf, B. B., 1959, Die Arten der Sarcophaginae in den Faunenkomplexen synanthroper Zweiflügler der verschiedenen Landschaftszonen der UdSSR. *Entomologicheskoe Obozrenie* 38 (4): 790-797 [in Russian with German summary].

Rohdendorf, B. B., 1965, Composition of the tribe Sarcophagini (Diptera, Sarcophagidae) of Eurasia. *Entomologicheskoe Obozrenie* 44 (3): 676-695 [in Russian with English summary].

Rohdendorf, B. B., 1970, Sem. Sarcophagidae – sarcophagidy. In: G. Ya. Bey-Byenko (ed.). *Key to Insects of European Part of the USSR* 5 (2): 624-670 [in Russian].

Rohdendorf, B. B. & K. Y. Grunin, 1938, The fauna of Sarcophaginae of the Sikhote-Alin State Reserve Territory. *Transactions of Sikhote-Alin State Reserve* 2: 87-100 [in Russian with English subtitle].

Romero, E., Arnaldos, M. I., García, M. D. & D. González-Mora, 2003, The Sarcophagidae (Insecta, Diptera) in a cadaveric ecosystem in the southeastern Iberian Peninsula. *Anales de Biología* 25: 49-63.

Rostand, J., 1920, Sur la biologie de *Sarcophaga filia* Pand. *Bulletin de la Société entomologique de France*: 215-216.

Roy, P. & B. Dasgupta, 1975, Seasonal occurrence of muscid, calliphorid and sarcophagid flies in Siliguri, West Bengal, with a note on the identity of *Musca domestica* L. *Oriental Insects* 9: 351-354.

Rudzinski, H.-G., 1995, Mitteilungen über Sarcophagiden. 1. Teil: Gattung *Discachaeta* Enderlein 1928 (Diptera: Sarcophagidae). *Entomologische Zeitschrift* 105 (6): 113-116.

Rudzinski, H.-G., 1999, Sarcophagidae, in: H. Schumann, et al. Checkliste der Dipteren Deutschlands. *Studia dipterologica Suppl.* 2: 182-186.

Rudzinski, H.-G. & H.-J. Flügel, 2007, Fliegen (Diptera excl. Conopidae et Syrphidae) aus Barberfallen und Netzfängen vom Halberg bei Neumorschen (Nordhessen, Fulda). *Philippia* 13 (1): 59-70.

Rukavishnikov, B. I., 1930, The materials to knowledge of flies parasited in larval and adult phases of locust (*Locusta migratoria* L.). *Bulletin of Plant Protection. Series Entomology* 1 (1): 191-261 [in Russian with English subtitle].

Ryvkin, B. V., 1958, *The entomophages of main lymantriids and tenthredinoids in forests of European part of USSR*. 34 pp. Doctor's dissertation thesis, Leningrad [in Russian].

Saccà, G., 1945, Miasi da *Sarcophaga falculata* Pand. *Rendiconti dell'Istituto superiore di sanità* 8 (2): 301-302.

Salaas, U., 1943, *Parasarcophaga aratrix* Pand. (Dipt., Tachinidae) in Körper von *Prionus coriarius* entwickelt. *Annales entomologici fennici* 9 (1): 23-28.

Saloña-Bordas, M. I. D. & D. Goñzales-Mora, 2005, New record of *Liosarcophaga aegyptica* Salem 1935 in the Iberian Peninsula with description of 2nd and 3rd instar maggots, puparium and adults. *Boletín de la Sociedad entomológica aragonesa* 36: 251-255.

Saloña-Bordas, M. I., Moneo Pellitero, J. & D. Herrero Dávila, 2007, New observations on *Liosarcophaga aegyptica* (Salem, 1935) reared from colonies collected on the university campus of Lejona (Vizcaya, northern Spain). *Boletín de la Sociedad entomológica aragonesa* 40: 377-383.

Salwa, K. M. & H. A. Abdel-Rahman, 1983, Seasonal abundance of Sarcophagidae (Diptera) in two localities in Egypt. *Bulletin de la Société entomologique de Égypte* 64: 89-94.

Schmitz, H., 1910, Zur Lebensweise von *Helicobosca muscaria* Mg. *Zeitschrift für wissenschaftliche Insektenbiologie* 6: 107-109.

Schmitz, H., 1917, Biologische Beziehungen zwischen Dipteren und Schnecken. *Biologischen Zentralblatt* 37: 24-43.

Séguy, E., 1921, Les diptères qui vivent aux dépans des ascargots. *Bulletin de la Société entomologique de France*: 238-239.

Séguy, E., 1930, Études sur les diptères a larves commensales ou parasites des oiseaux de l'Europe occidentale. *Encyclopédie entomologique* [1929] B (2) 5: 62-82.

Séguy, E., 1932, Études sur les diptères parasites ou prédateurs des sauterelles. *Encyclopédie entomologique* B (2) 6: 11-40.

Séguy, E., 1941, Etudes sur les mouches parasites. Tome 2. Calliphorines (suite), sarcophagines et rhinophorides de l'Europe occidentale et meridionale. *Encyclopédie entomologique* A 21: 1-436.

Séguy, E., 1953, Diptères du Maroc. *Encyclopédie entomologique* B (2) 11: 77-92.

Séguy, E., 1965, Le *Sarcophaga nigriventris* parasite de l'abeille domestique en Europe occidentale (Insect, diptères, calliphorid). *Bulletin de la Muséum nacional d'histoires naturelles* 37 (3): 407-411.

Senior-White, R. A., Aubertin, D. & J. Smart, 1940, *Diptera. Family Calliphoridae*. Taylor and Francis, Ltd., London, xiii + 288 pp. [The Fauna of British India, including the remainder of the Oriental Region 6.]

Sevgili, M., Şaki, C. E. & M. Gökçen, 2004a, Genital myiasis in gazelle. *Türkiye Parazitoloji Dergisi* 28 (4): 202-204.

Sevgili, M., Şaki, C. E. & Z. Özkuṭlu, 2004b, External myiasis in the Şanlıurfa Province: The distribution of flies. *Türkiye Parazitoloji Dergisi* 28 (3): 150-153.

Shapiro, V. A., 1956, The principal parasites of gypsy moth (*Porthezia dispar* L.) and the prospects of using them. *Zoologicheskiy Zhurnal* 35 (2): 251-265 [in Russian with English summary].

Shazia, M. T., Anjum, S. & M. J. Yousuf, 2006, Systematics and population of sarcophagid flies in Faisalabad (Pakistan). *International Journal of Agriculture and Biology* 8: 809-811.

Shiota, T., Yoshida, Y., Hirai, S. & S. Torii, 1990, Intestinal myiasis caused by *Parasarcophaga crassipalpis* (Diptera, Sarcophagidae). *Pediatrics* 85: 215-217.

Shura-Bura, B. L., 1952, The infection of fruits by synanthropic flies. *Entomologicheskoe Obozrenie* 32: 117-125 [in Russian].

Shura-Bura, B. L. & A. B., Gaydukova, 1975, On the revision of epidemiological importance of flies in intestinal infections. *The materials of 7th Meeteig of Entomological Society of USSR*: 266, Leningrad [in Russian].

Sierpińska, A., 1998, Towards an integrated management of *Dendrolimus pini* L. *USDA Forest Service General Technical Report NE-247*: 129-142.

Sikura, A. I., 1959, The parasites and predators of *Hyphantria cunea* in Transcarpathians. *Transactions of the Ukrainian Plant Protection Institute* 8: 185-198 [in Ukrainian].

Silveira, G. A., Carbonell, B. J. F., Núñez, O. & E. Valdés, 1958, *Investigaciones sobre acridoideos del Uruguay (sistematica, morfología, citología, economía, habitat, ciclo biológico, costumbres, ecología, geografía, enemigos naturales y control)*, 168 pp. University Press, Montevideo.

Singh, B. & M. Bharti, 2008, Some notes on the nocturnal larviposition by two species of *Sarcophaga* (Diptera: Sarcophagidae). *Forensic Science International* 177: 19-20.

Sinha, S. K., Ghosh, S. & B. C. Nandi, 2002, Preliminary studies on Sarcophagid, Calliphorid and Muscid flies (Diptera) of Sagar Island, Bakkhali, Fraserganj, Jambu island, Kakdwip and Ghoramara island in Sundarbans Biosphere Reserve, India. *Proceedings of a Review Meeting on Biosphere Reserve*: 162-164.

Skidmore, P., 1991, Insects of the British cow-dung community. *Field Studies Council, Occasional Publication* 21: 1-166.

Skufyin, K. V. & L. N. Khitsova, 1967, The materials to fauna of grey flesh flies (Diptera, Sarcophagidae) of Voroniezh Region. *Vrednye i poleznye nasekomye Voroniezhkoy oblasti*: 160-167, Voroniezh, University Press [in Russian, with English subtitle].

Slamečková, M., 1961, Beitrag zur Verbreitung der Fleischfliegen (Sarcophagidae, Diptera) einiger Lokalitäten der Süd- und Ostslowakei. *Biológia* 16 (8): 586-595 [in Slovak with Russian and German summaries].

Smith, K. G. V., 1957, Some miscellaneous records of bred Diptera. *Entomological Records* 69: 214-216.

Stackelberg, A. A., 1956, Dipteres synanthropes de la faune de l'URSS. *Manuals edited by Zoological Institute of Academy of Sciences USSR* 60: 1-164 [In Russian with French subtitle].

Stepanova, R. K., Girfanova, L. N., Yafaeva, Z. S. & N. T. Idrisova, 1977, The pest lepidopterans of forests of Bashkiria and their entomophages. *The Materials on Fauna and Ecology of Animals of Southern Ural VINITI N 4549-77 Dep.*: 15-28. Ufa [in Russian].

Sucharit, S., Tumrasvin, W. & S. Vutikes, 1976, A survey of houseflies in Bangkok and neighboring provinces. *Southeast Asian Journal of Tropical Medicine and Public Health* 7 (1): 85-90.

Sukhova, M. N., 1952, *Synanthropic flies*. USSR Academy of Sciences Publishers, 60 pp., Moscow [in Russian].

Sukontason, K. L., Sanit, S., Klong-khaew, T., Tomberlin, J. K. & K. Sukontason, 2014, *Sarcophaga (Liosarcophaga) dux* (Diptera: Sarcophagidae): A flesh fly species of medical importance. *Biological Research* 47 (14): 1-9.

Sychevskaya, V. I., 1957, On seasonal fluctuations of synanthropic flies in different landscape zones of Uzbekistan. *Zoologicheskiy Zhurnal* 36 (5): 719-727 [in Russian with English subtitle].

Sychevskaya, V. I., 1960, On the phenology of the synanthropic flies of Uzbekistan. *Medical Parasitology and Parasitic Diseases* 29 (1): 66-72 [in Russian].

Sychevskaya, V. I., 1961, On the species composing of the synanthropic flies of Fergana valley. *Transactions of Academy of Sciences of Tajik SSR. Branch of Agricultural and Biological Sciences* 2 (5): 85-89 [in Russian].

Sychevskaya, V. I., 1965, On the fauna of the synanthropic flies of Tian-Shan and Altai. *Entomological Investigations in Kirghizia*: 43-49, Frunze [in Russian with English subtitle].

Sychevskaya, V. I., 1966, On synanthropic flies of the Pamir. *Zoologicheskiy Zhurnal* 45 (3): 390-399 [in Russian with English summary].

Sychevskaya, V. I., 1970, Zonal distribution of coprophilous and necrophilous flies (Diptera) in Middle Asia. *Entomologicheskoe Obozrenie* 49 (4): 819-831 [in Russian with English summary].

Sychevskaya, V. I., 1972, Synanthropic flies (Diptera) from the Lower Amy-Darya. *Entomologicheskoe Obozrenie* 51 (3): 534-552 [in Russian with English summary].

Sychevskaya, V. I., 1978, On the morphology and ecology of *Bellieria macrura* Rohd. (Diptera, Sarcophagidae). *Ecological and Faunistic Studies of Yakutian Insects*:140-144, Yakutsk [in Russian with English subtitle].

Sychevskaya, V. I., Gruditzina, M. V. & A. A., Vyrvikhvost, 1959, The epidemiological significance of synanthropic flies (Diptera) in Bukhara. *Entomologicheskoe Obozrenie* 38 (3): 568-578 [in Russian with English summary].

Sychevskaya, V. I. & T. A., Petrova, 1958, On the importance of flies in distribution of helminths' eggs in Uzbekistan. *Zoologicheskiy Zhurnal* 37 (4): 563-569 [in Russian with English subtitle].

Sychevskaya, V. I. & P. P. Vtorov, 1969, Synanthropic flies (Diptera) from Mountain Kirghizia. *Entomologicheskoe Obozrenie* 48 (4): 816-830 [in Russian with English summary].

Tabakovic-Tasic, M., Georgiev, G., Mirchev, P., Tasic, D. & V. G. Curguz, 2013, Gypsy moth in Central Serbia over the previous fifty years. *Acta zoologica bulgarica* 65 (2): 165-171.

Tan, S. H., Rizman-Idid, M., Mohd-Aris, E., Kurahashi, H. & Z. Mohamed, 2010, DNA-based characterization and classification of forensically important flesh flies (Diptera: Sarcophagidae) in Malaysia. *Forensic Science International* 199 (1-3): 43-49.

Tantawi, T. L., El-Kady, E. M., Greenberg, B. & H. A. El-Ghaffar, 1996, Arthropod succession on exposed rabbit carrion in Alexandria. *Journal of Medical Entomology* 33 (4): 566-580.

Tatsuta, H., 2002, A new host record for *Blaesoxipha grisea* Meigen (Diptera: Sarcophagidae). *Japanese Journal of Entomology* (N. S.) 5 (2): 120

Taylor, A., 1964, *Blaesoxipha filipjevi* Rohd. (Diptera, Sarcophagidae) parasitising *Zonogerus variegatus* (L.) (Orthoptera, Acridoidea) in Nigeria. *Bulletin of Entomological Research* 55 (1): 83-86.

Tereshkin, A. M., 1991, Insects-parasites of the nun-moth (*Lymantria monacha* L.) in Byelorussia. *XII Internationales Symposium über Entomofaunistik Mitteleuropa Verhandlungen*. Kiew, 1988: 262-265

Tereshkin, A. M. & Yu. S. Lobodenko, 1997, Some results on rearing entomophagous insects in Belarus. *Transactions of Belorussian Academy of Sciences. Serie of Biological Sciences* 3: 99-103, 127 [in Russian with Belorussian and English summaries]

Töld, F., 1913, Biologie und Morphologie einiger in Nonnenraupen schmarotzender Fliegenlarven. *Zentralblatt für Bakteriologie, Parasitenkunde und Infektionskranken* 37 (2): 392-412.

Toye, S. A., 1982, Studies on the biology of the grasshopper pest *Zonocerus variegatus* (L.) (Orthoptera: Pyrgomorphidae) in Nigeria 1911-1981. *Insect Science and its Application* 3 (1): 1-7.

Trofimov, G. K., 1957, A case of myiasis of sheep, produced by larvae of flies *Parasarcophaga parkeri* Rohd. and *P. securifera* Vill. in the Transcaucasus. *Entomologicheskoe Obozrenie* 36 (3): 652-654 [in Russian with English subtitle].

Trofimov, G. K., 1965, A short revue of the fauna of synanthropic flies from families Muscidae, Calliphoridae and Sarcophagidae (Diptera) of Talysh. *Entomologicheskoe Obozrenie* 44 (3): 605-612 [in Russian with English subtitle].

Trofimov, G. K., 1969, Systematic and ecological-geographical review of the fauna of the tribe Sarcophagini of Azerbaijan (Diptera, Sarcophagidae). I. A review of the special composition of fauna. *Transcations of the Azerbaijan Institute for Medical Parasitology and Tropical Medicine* 7: 219-228 [in Russian with French summary].

Trofimov, G. K. & L. S., Engelgart, 1965, The research of synanthropic flies in Baku City on intestinal protistes of man. *Transcations of the Azerbaijan Institute for Medical Parasitology and Tropical Medicine* 5: 186-188 [in Russian].

Udgaonkar, U. S., Dharamsi, R., Kulkarni, S. A., Shah, S. R., Patil, S. S., Bhosale, A. L., Gadgil, S. A. & R. S. Mohite, 2012, Intestinal myiasis. *Indian Journal of Medical Microbiology* 30 (3): 332-337.

Uni, S., Shinonaga, S., Nishio, Y., Fukunaga, A., Iseki, M., Okamoto, T., Ueda, N. & T. Miki, 1999, Ophthalmomyiasis caused by *Sarcophaga crassipalpis* (Diptera: Sarcophagidae) in a hospital patient. *Journal of Medical Entomology* 36 (6): 906-908.

Van Someven, G. J. E., 1965, *Blaesoxipha filipjevi* (Rohd.) (Diptera: Calliphoridae) parasitising hoppers of the brown locust, *Locustana pardalina* (Walker). *Journal of Entomological Society of Southern Africa* 28 (1): 133.

Vanin, S., Tasinato, P., Ducolin, G., Terranova, C., Zancaner, S., Montisci, M. & M. Turchetto, 2007, The presence of blow flies (Diptera: Calliphoridae) in six cases of death in Padova city and its surroundings. Discussion of the role of *Lucilia* species as forensic indicators. *Firth meeting of the European association for forensic entomology (2nd-5th May 2007). Program and Abstracts*: 23-24, Brussels, Belgium.

Vashchynskaya, N. V., 1957, On synanthropic flies of Armenian SSSR. *Medical Parasitology and Parasitic Diseases* 26 (4): 463-470 [in Russian].

Vasilyev, I. V., 1902, Black-veined white (*Aporia crataegi* L.) and its' parasites. *Traveaux du Bureau d'Entomologie* 3 (8): 1-36 [in Russian].

Vasilyev, I. V., 1913, The pine and cedar moths, their behavior, pest activity and methods of control. *Traveaux du Bureau d'Entomologie* 5 (7): 1-104 [in Russian].

Vayssiére, P., 1921, La lutte contre le criquet marocain (*Dociostaurus maroccanus* Thunb.) en Crau en 1920. *Annales de Epiphytes* 7: 117-169 + 11 pls.

Velásquez, Y., Magaña, C., Martínez-Sánchez, A. & S. Rojo, 2010, Diptera of forensic importance in the Iberian Peninsula: larval identification key. *Medical and Veterinary Entomology*, doi: 10.1111/j.1365-2915.2010.00879.x.

Verves, Yu. G., 1973, On the knowledge of fauna of flies of family Sarcophagidae of Kanev Reserve. *Vestnik zoologii* 7 (1): 24-29 [in Russian with English summary].

Verves, Yu. G., 1974, On the knowledge of sarcophagids (Diptera, Sarcophagidae) – the parasites of acridids. In: A. F. Kryshchuk (ed.). *The pathology of Insects and Biological Methods of Control for Pest Species. These of reports of the 1st Kiev State Conference*: 38-40, Kyiv [in Russian].

Verves, Yu. G., 1975, Adults' feeding of sarcophagids (Diptera, Sarcophagidae) for flowers in the borders of the Middle Dnieper area. *Bulletin of Kyiv University. Biology* 17: 113-115 [in Ukrainian with English summary].

Verves, Yu. G., 1976, On the knowledge of sarcophagids (Diptera, Sarcophagidae) – parasites of terrestrial gastropods. *Vestnik Zoologii* 10 (3): 28 [in Russian].

Verves, Yu. G., 1977, The zonal landscape distribution of sarcophagids (Diptera, Sarcophagidae) in the Carpathian mountains and foothills. *Bulletin of Kyiv University. Biology* 19: 78-82 [in Ukrainian with English summary].

Verves, Yu. G., 1978a, Vertical zonal distribution of sarcophagids (Diptera, Sarcophagidae) in Crimea. *Bulletin of Kyiv University. Biology* 20: 93-96 [in Ukrainian with English summary].

Verves, Yu. G., 1978b, On fauna of Sarcophaginae (Diptera, Sarcophagidae) of Caucasus. *Scientific Reports of the High School. Biological Sciences* (3): 36-45 [in Russian with English summary].

Verves, Yu. G., 1979, Palaearctic species of the subgenus *Spatulapica* Fan of the genus *Heteronychia* B. B. (Diptera, Sarcophagidae). *Zoologicheskiy Zhurnal* 58 (6): 860-870 [in Russian with English summary].

Verves, Yu. G., 1984, On the fauna of Sarcophagidae (Diptera) of the Mongolian People's Republic. V. New data on sarcophagids from Mongolia and neighboring territories. *Insects of Mongolia* 9: 527-561 [in Russian with English subtitle].

Verves, Yu. G., 1985, 64h. Sarcophaginae. In: E. Lindner (ed.). *Die Fliegen der palaearktischen Region* 11 (330): 297-400.

Verves, Yu. G., 1986, Family Sarcophagidae, p. 58-193. In: A. Soos & L. Papp (eds). *Catalogue of Palaearctic Diptera*. Vol. 12. *Calliphoridae – Sarcophagidae*. Akademiai Kiado; Budapest, Amsterdam, New York.

Verves, Yu. G., 1987, Sarcophagids – parasites of locusts in Kyiv Region (Diptera: Sarcophagidae; Orthoptera: Acridoidea). *The Problems of General and Molecular Biology* 6: 33-39.

Verves, Yu. G., 1989, Prof. Hugo de Souza Lopes and the modern system of Sarcophagidae (Diptera). *Memorias do Instituto Oswaldo Cruz* 84 (Suppl. 4): 529-545.

Verves, Yu. G., 1990, A key to Sarcophagidae (Diptera) of Mongolia, Siberia and neighbouring territories. *Insects of Mongolia* 11: 516-616 [in Russian with English subtitle].

Verves, Yu. G., 1993, 64h. Sarcophaginae. In: E. Lindner (Ed.). *Die Fliegen der palaearktischen Region* 11 (331): 441-504.

Verves, Yu. G., 1998, A checklist of species of the Ukrainian Sarcophagidae (Diptera) with a description of a new species. *Journal of the Ukrainian Entomological Society* 4 (3-4): 49-57.

Verves, Yu. G., 2000, Sarcophagidae (Diptera) from Dnipropetrovsk Oblast. *Ecology and Noosphaerology* 9 (1-2): 122-126.

Verves, Yu. G., 2001, Sarcophagidae and Calliphoridae (Diptera) of Chernivtsi Oblast. *Scientific Reports of the Chernivtsi University. Biology* 126: 163-167.

Verves, Yu. G., 2003, The flies of the families Calliphoridae, Sarcophagidae and Rhinophoridae (Insecta: Diptera) of Botany garden in memory of O. V. Fomin of Kyiv National T. Shevchenko University. *The Introduction and Conservation of Plant Diversity* 6: 43-46.

Verves, Yu. G., 2004, The results of study of the system and fauna of two-winged insects during 40 years (Insecta: Diptera). *Kyiv National Taras Shevchenko University. Scientific Papers 2 (Biology)*: 66-73 [in Ukrainian with English summary].

Verves, Yu. G., 2010, Special composition of two-winged flies (Diptera: Sarcophagidae, Rhinophoridae, Calliphoridae) in District of Bogatyrsk biological station of Melitopol State Pedagogical University (Zaporozhye Region). *VI International scientific and practical Internet-conference*. Melitopol State Pedagogical University, 2010. <http://conference.mdpu.org.ua/viewtopic.php>

Verves, Yu. G., 2013, The flies (Diptera) of Park "Theophania", Kyiv. 2. Sarcophagidae. *Ukrainska Entomofaunistyka* 4 (1): 25-32.

Verves, Yu. G. & L. A. Khrokalo, 2006, 123. Fam. Sarcophagidae – sarcophagids. *Key to the insects of Russian Far East* 6 (4): 64-178 [in Russian].

Verves, Yu. G. & L. A. Khrokalo, 2009, 14. Superfamily Oestroidea. Family Sarcophagidae, In: J Gerlach (Ed): The Diptera of the Seychelles islands. *Pensoft Series Faunistica* 85: 270-303.

Verves, Yu. G. & L. A. Khrokalo, 2014, An annotated list of the Sarcophagidae (Macronychiinae, Miltogramminae, Eumacronychiinae and Paramacronychiinae) recorded in Ukraine (Diptera). *CESA News* 95: 1-47.

Verves, Yu. G., Korneev, V. A. & I. I. Vlasov, 1984, The dipteran of families Platystomatidae, Otitidae, Tephritidae, Syrphidae and Sarcophagidae of Zaporozhye Region. *Problems of General and Molecular Biology* 3: 86-90. Kyiv [in Russian with English subtitle].

Verves, Yu. G. & L. G. Kuzmovich, 1979, Sarcophagine (Diptera, Sarcophagidae), parasites of terrestrial gastropods in the Ternopol Region. *Vestnik Zoologii* 13 (4): 16-21 [in Russian with English summary].

Verves, Yu. G., Serga, O. I., Khrokalo, L. A. & O. V. Bezkravna, 2005, An ecological and faunistic review of some groups of invertebrate of Kyiv and its outskirts. *General and Applied Entomology in Ukraine*: 50-51. Lviv [in Ukrainian].

Verves, Yu. & K. Szpila, 2011, *Agriella gavrylenkoi*, a new species of fleshfly from Ukraine (Diptera: Sarcophagidae: Sarcophaginae). *Polish Journal of Entomology* 80: 123-128.

Viktorov-Nabokov, O. V. & Yu. G. Verves, 1975, To the knowledge of flies (Diptera, Calliphoridae, Sarcophagidae), parasiting in earthworms (Oligochaeta, Lumbricidae). *The Problems of Soil Zoology. Materials of 5th All-USSR Conference*: 97-98, Vilnius [in Russian].

Vinokurov, G. M., 1927, Grasshoppers and areas of their outbreaks in Eastern Siberia. *Transactions of Irkutsk Plant Protection Station* 1: 3-52 [in Russian with English summary].

Vorontzovsky, P., 1924, On the biology of *Sarcophaga lineata* Fall. *Transcations of Society for Kirghiz Region Investigations* 5: 10-11 [in Russian].

Wangko, S., Kristanto, E. G. & S. J. R. Kalangi, 2014, Pola serangga nekrofagus pada dekomposisi hewan coba indoors di kota Manado. *Jurnal Biomedik* 6 (2):110-118.

Wei, L. M., 2007, Sarcophagidae. In: Z. Z. Li, M. F. Yang & D. C. Jin (eds.) *Insects from Leigongshan Landscape*: 526-539. Guizhou Science and Technology Press, Guiyang.

Whitmore, D., 2011, New taxonomic and nomenclatural data on *Sarcophaga* (*Heteronychia*) (Diptera: Sarcophagidae), with description of six new species. *Zootaxa* 2778: 1-57.

Whitmore, D., Richet, R. & T. Pape, 2008, Sarcophagidae, in: J. Ziegler (ed.), Diptera Stelviana. A dipterological perspective on a changing alpine landscape. Vol. 1. *Studia dipterologica Suppl.* 16: 229-237.

Wilton, D. P., 1961, Refuse containers as a source of flies in Honolulu and nearby communities. *Proceedings of the Hawaiian Entomological Society* 17 (3): 477-481.

Woodroffe, G. E., 1953, An ecological study of the insects and mites in the nests of certain birds in Britain. *Bulletin of Entomological Research* 44 (4): 739-772.

Wyatt, N. P. & P. H. Sterling, 1988, Parasites of the brown-tail moth *Euproctis chrysorrhoea* (L.) (Lep., Lymantriidae), including two Diptera (Tachinidae, Sarcophagidae) new to Britain. *Entomologist's Monthly Magazine* 124 (1492-1495): 207-213.

Xue, W. & Yu. Verves, 2009, *Perisimyia perisi*, a new genus and species from South China (Diptera: Sarcophagidae). *Boletín de la Asociación española de entomología* 33 (1-2): 43-58.

Xue, W., Verves, Yu. & J. Du, 2011, A review of subtribe Boettcheriscina Verves 1990 (Diptera: Sarcophagidae), with descriptions of a new species and genus from China. *Annales de la Société entomologique de France* (N. S.) 47 (3-4): 303-329.

Yafaeva, Z. S., 1977, *Stilpnobia salicis* in Bashkiria. *Insect Pests in Bashkirian Forests*: 65-72. Ufa [in Russian].

Yang, L., Cai, J. F., Lan, L. M., Jiang, Y., Li, Xm, Li, J. B., Dai, Z. H. & X. Peng, 2010, Succession of sarcosaphagous insects at summer and autumn in Shijiazhuang area. *Journal of Forensic Medicine (Quarterly)* 26 (4): 253-256 [in Chinese with English abstract].

Yarmanshevich, G. F., 1970, On the effect of parasitic tachinids of pine tenthredinids and pine moth in Belarussia. *Silvics and Forestry* (3): 181-183 [in Russian].

Yates, J. R., 1967, Immature stages of the flesh fly, *Parasarcophaga (Thomsonea) argyrostoma* (Robineau-Desvoidy). *Proceedings of the Hawaiian Entomological Society* 19 (3): 433-440.

Yoneda, Y. & H. Iwami, 1981, A case of ophthalmomyiasis externa. *Japanese Journal of Sanitary Zoology* 32 (2): 130-132.

Yoneda, Y., Shinonaga, S., Kumashiro, H. & T. Fukuma, 1998, Eleven cases of human myiasis since 1990. *Medical Entomology and Zoology* 49 (1): 51-56.

Zakharova, N. F., 1961, The ecology and epidemiological significance of synanthropic species of the family Sarcophagidae in Turkmenia. *Medical Parasitology and Parasitic Diseases* 30 (2): 208-214 [in Russian].

Zakharova, N. F., 1965, On the ecology of flies of the family Sarcophagidae (Diptera). *Medical Parasitology and Parasitic Diseases* 34 (5): 533-540 [in Russian with English summary].

Zakhvatkin, A. A., 1954, Parasites of the grasshoppers of Angara basin. *Proceedings of the Entomological Society of USSR* 44: 240-300 [in Russian with English summary].

Zhang, M.-Y., 1982, A study of the larvae of some common sarcophagid flies from China. *Entomotaxonomia* 4 (1-2): 93-106 [in Chinese with English summary].

Ziegler, J. & C. Lange, 2001, Woodlouse flies, flesh flies, and parasitic flies (Diptera: Rhinophoridae, Sarcophagidae, Tachinidae) from South Tyrol (Italy). *Gredleriana. Acta biologica* 1: 133-170.

Zinovyev, G. A., 1962, On the Siberian silkworm moth *Dendrolimus sibiricus* Tshtv. (Lepidoptera, Lasiocampidae) and its parasites in the middle Urals. *Entomologicheskoe Obozrenie* 41 (1): 50-53 [in Russian with English subtitle].

Zumpt, F., 1965, *Myiasis in man and animals in the Old World*. A textbook for physicians, veterinarians and zoologists, xv + 267 pp., Butterworths, London.

Zumpt, F., 1972, Calliphoridae (Diptera Cyclorrhapha). Part IV. Sarcophaginae. *Exploration du Parc National des Virunda. Mission G. F. de Witte (1933-1935)* 101: 1-264.

Table 1: The quantity of known species for Ukrainian regional and general faunas

no	region	number of species					
		Macronychinae	Miltogrammiae	Eumacronychinae	Paramacronychinae	Sarcophaginae	Sarcophagidae, sum
1	Cherkasy	(5) ¹⁸ 5	(30) 33 ¹⁹	(1) 1	(8) 8	(55) 56	(99) 103
2	Chernigiv	(3) 3	(24) 26	-	(7) 7	(32) 38	(66) 73
3	Chernivtsi	(2) 2	(4) 4	-	(3) 3	(50) 52	(59) 61
4	Crimea	(3) 3	(23) 30	(1) 1	(9) 10	(51) 52	(87) 96
5	Dnipropetrvsk	(6) 6	(19) 19	-	(5) 5	(36) 39	(66) 69
6	Donezk	(2) 6	(9) 9	-	(3) 4	(20) 20	(34) 39
7	Ivano-Frankivsk	(2) 2	(6) 6	-	(5) 5	(43) 45	(56) 58
8	Kharkiv	(5) 5	(24) 24	(1) 1	(10) 10	(34) 34	(83) 83
9	Kherson	(1) 1	(30) 30	(1) 1	(9) 9	(46) 46	(87) 87
10	Khmelnyzky	-	(5) 5	-	(5) 5	(19) 19	(29) 29
11	Kirovograd	(2) 2	(11) 11	-	(2) 2	(23) 23	(38) 38
12	Kyiv City	(6) 6	(29) 29	(1) 1	(8) 8	(46) 46	(90) 90
13	Kyiv Region	(4) 4	(29) 29	(1) 1	(10) 10	(54) 54	(98) 98
14	Luhansk	(1) 1	(6) 17	(0) 1	(4) 7	(19) 19	(30) 45
15	Lviv	(2) 2	(7) 7	-	(4) 4	(16) 16	(29) 29
16	Mykolaiv	(1) 1	(10) 16	(1) 1	(4) 4	(26) 27	(42) 49
17	Odesa	(1) 1	(13) 17	(0) 1	(4) 5	(31) 33	(49) 57
18	Poltava	(1) 1	(24) 26	-	(7) 9	(41) 45	(73) 81
19	Rivne	(2) 2	(0) 1	-	(1) 1	(13) 13	(16) 17
20	Sumy	(3) 3	(7) 13	-	(1) 5	(17) 24	(28) 45
21	Ternopil	(1) 1	(6) 6	-	(2) 2	(18) 22	(27) 31
22	Vinnysia	(2) 2	(5) 5	-	(2) 2	(15) 22	(24) 31
23	Volyn	(1) 1	(4) 4	-	(3) 3	(26) 26	(34) 34
24	Zakarpattyia	(2) 2	(9) 9	-	(4) 4	(49) 53	(64) 68
25	Zaporizzhya	(1) 1	(26) 26	-	(9) 9	(38) 39	(74) 75
73	Zhytomyr	(2) 2	(13) 13	-	(5) 5	(31) 31	(51) 51
Sum		(8) 8	(56) 56	(1) 1	(15) 15	(95) 99	(175) 179

¹⁸ Results according to literature data.

¹⁹ Results included literature and original data.

Addendum & Corrigendum

Muhabbet Kemal Ahmet Ömer Koçak

In the previous number of this serial, the authors published erroneously the name of a pentatomid bug as "*Dolycoris baccharum* (Fig.21)". This name must be changed to "*Codophila varia*".

Among the pentatomid species, *Dolycoris baccharum* is one of the widely distributed species in Turkey, but its occurrence in Malatya Province must be deleted for the time being. On the other hand, the genus *Codophila* is represented by two species in the West Palearctic; namely, *varia* and *maculicollis*. The former is also widely distributed in Turkey; the latter is known from North Africa, partly in Middle East, and Armenia in the Caucasus. Its occurrence in Turkey is highly probable, but not reported in this country so far. For that reason, in order to be sure about the identity of the specimen taken from Malatya, the preparation of the male genitalia has been made by the first author (Fig.1). Number of the short setae at the base of the hypophysis and the shape of pygophore in the male genitalia reveal that the specimen belongs to *C. varia*.

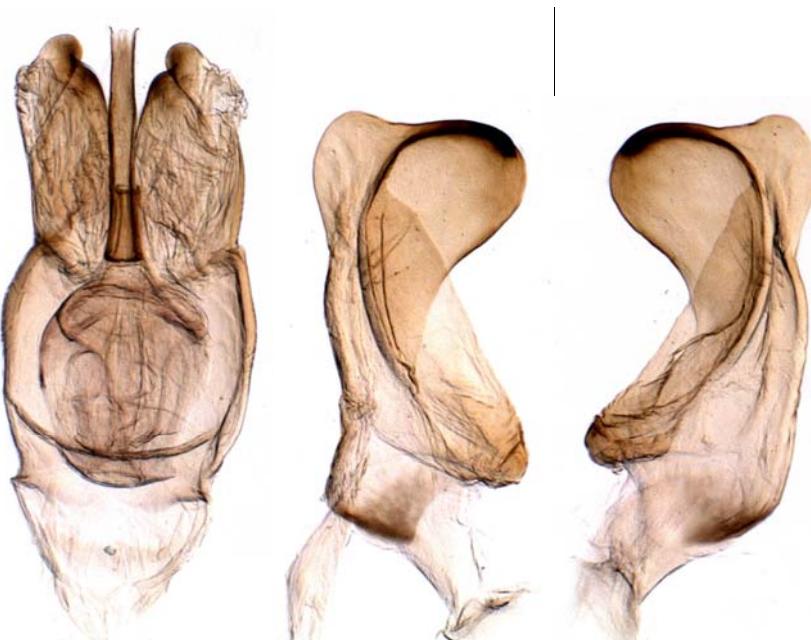


Fig. 1 – Male genitalia of *Codophila varia* (Pentatomidae, Hemiptera) from Malatya Prov. (Beydağı NP) (GP0043MK). Aedeagus and parameres. Short setae at the base of hypophysis are less than 7. As a diagnostic character, number of these short setae in *Codophila maculicollis* is between 30-40, while 4-7 in *C. varia* (Ribes & Pagola-Carte, 2013: 202).

Acknowledgement

We thank to Prof. Dr. Ernst Heiss (Austria) for his kind message about *Dolycoris baccharum*, and supplying the information for the *Codophila* species in Faune de France, vol.96.

References

Kemal, M. & A.Ö. Koçak, 2014. A short entomo-faunistical visit to Bey Dağı Natural Park, Malatya Province (East Turkey). *Cesa News* 100: 1-16, 28 figs.
Ribes, J. & S. Pagola-Carte, 2013. Hémiptères Pentatomoidea Euro-Méditerranéens (vol.2). *Faune de France* 96: 424 pp. 69 figs.

Contents: **Gorbunov, O.G.**, *Crinipus leucozonipus* Hampson, 1896 – a new genus and species for the palaearctic fauna (Lepidoptera, Sesiidae), p. 1 – **Verves, Y. & L. Khrokalo**, An annotated list of the *Sarcophaginae* (Sarcophagidae) recorded in Ukraine (Diptera), p.7– **Kemal, M. & A.Ö. Koçak**, Addendum & Corrigendum, p.82 – **Editorial**, p. 83.

Centre for Entomological Studies Ankara



(A scientific Consortium)
(co-operation of research workers for pure-scientific, not commercial purpose)

Web Page of the Cesa: <http://www.cesa-tr.org/>

Scientific Serials: Priamus & Supplement (ISSN 1015-8243)²⁰, Miscellaneous Papers (ISSN 1015-8235)²¹, Memoirs (ISSN-8227)²² DVD Films²³, Iconographia Insectorum²⁴ Cesa Publications on African Lepidoptera (series)²⁵, Cesa News [online]²⁶, Cesa Books²⁷
Owners / Sahipleri - Editors / Yayıncılar: Prof. Dr. Ahmet Ömer Koçak (c/o Yüzüncü Yıl University, Turkey) - Editor Assistant: Asst. Prof. Dr. Muhabbet Kemal Koçak (c/o Yüzüncü Yıl University, Turkey).

Editorial Board of all Scientific Serials / Bütün Bilimsel Yayınların Yayın Kurulu: Insecta, taxonomy, nomenclature, ecology, faunistics: Prof. Dr. Ahmet Ömer Koçak (Yüzüncü Yıl Üniversitesi, Turkey), Asst. Prof. Dr. Muhabbet Kemal Koçak (Yüzüncü Yıl University, Turkey), Assoc. Prof. Dr. Selma Seven (Gazi University, Turkey); Homoptera: Dr. Emine Demir (Turkey). Coleoptera / Chrysomelidae: Assoc. Prof. M.S. Mohammedsaad (Malaysia). - Plant taxonomy, flora and vegetation: Asst. Prof. Dr. Fevzi Özgökçe, Asst. Prof. Dr. Murat Ünal (Yüzüncü Yıl University, Van, Turkey).

ALL RIGHTS RESERVED

Correspondences should be addressed to: Prof. Dr. Ahmet Ömer Koçak, c/o Yüzüncü Yıl University, Fen Fakültesi, Biyoloji Bölümü, Kampus, Van / Turkey. - e-mail: cesa_tr@yahoo.com.tr

All serials are recorded regularly by the Zoological Record,
 Thomson Reuters, Enterprise House, Innovation Way, Heslington, York, YO10 5NQ, United Kingdom
ts-emea-york.desadmins@thomson.com

²⁰ <http://www.cesa-tr.org/Pri.htm> - pdf available after corresponding

²¹ <http://www.cesa-tr.org/Miscell.htm> - pdf available after corresponding

²² <http://www.cesa-tr.org/Memoirs.htm> -

²³ <http://www.cesa-tr.org/CDF.htm>

²⁴ <http://www.cesa-tr.org/Icon.htm>

²⁵ http://www.metafro.be/Members/Cesa/internet_sayfas305/base_view - pdf available

²⁶ <http://www.cesa-tr.org/Cesanews.htm>

²⁷ <http://www.cesa-tr.org/Cesabooks.htm>